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TWENTY SEVEN VARIETIES OF SERPENTS.

The Boa Constrictor

Fatal Viper

The Green Boa

Two Headed Snake

Amphisbena Alba

Dart Snake of Ceylon

Elegant Viper

The Panama Viper

The Atropos

Coronated Viper

The Aurox

Egyptian Asp

Crotaline Viper

The Horned Snake

The Severus

Deadly Viper

Tessellated Viper

Cobra de Monil

The Water Viper

Amphisbena Fuliginosa

Amulared Snake of Surinam

The Warty Snake

Amphisbena Alba

Viper of Europe

Rattle Snake

Cobra de Capello



# NATURE DISPLAYED

IN THE

## HEAVENS,

AND

## ON THE EARTH,

ACCORDING TO THE LATEST

### *OBSERVATIONS AND DISCOVERIES.*



By SIMEON SHAW L.L.D.

---

Oh, how great,  
To mingle interests, converse, amities,  
With all the sons of Reason, scattered wide  
Through habitable space, wherever born,  
Howe'er endowed! To live free citizens  
Of universal nature! To lay hold  
By more than feeble faith on the SUPREME!  
To rise in science, as in bliss,  
Initiate in the secrets of the skies!  
To read creation; read its mighty plan!  
The plan, and execution, to collate!  
To see, before each glance of piercing thought,  
All cloud, all shadow, blown remote; and leave  
No mystery—but that of LOVE DIVINE!

YOUNG.

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IN SIX PARTS.

PART IV.

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DESCRIPTION  
OF THE  
ENGRAVINGS IN PART IV.

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TWENTY-SEVEN VARIETIES OF SNAKES.

In this class of amphibia there are six genera, as under:

1. The *Crotalus*, or Rattle-snake.
2. The Boa, of which there are ten species.
3. *Coluber*, or Viper.
4. The *Anguis*.
5. The *Amphisbæna*, with annular segments.
6. The Tentaculated Snake, with a wrinkled tail and body without scales.

They have very wide mouths, and can swallow substances three times as large as their own head, because the jaws are not inserted in each other, but are connected by a stretching muscular string, and the throat stretches like Indian rubber. The teeth are capable of being erected or depressed at pleasure; their tongue is long and forked, and in some of the viper kinds are a fifth of the length of their bodies, which they dart out, and terrify the ignorant. The joints in their back are very numerous, being 145 from the head to the vent, and 25 from thence to the tail, and the bones play into each other like a ball and socket. There being two ribs to every joint, they are 290 in number. The skin is composed of scales, which is generally cast twice a year. They grow larger as they grow older, and, though voracious, can live a long time without food. They live in hostility with most other animals; and there are few or none which they are not able to overcome. Their contests are chiefly on the banks of rivers.

Thus the neighbourhood of a rivulet, during the drought of tropical countries, is generally the place where all the hostile tribes of nature draw up for engagement. On the banks of this envied spot, thousands of animals of



viii. DESCRIPTION OF THE ENGRAVINGS IN PART IV.

various kinds are seen venturing to quench their thirst, or preparing to seize their prey. The elephants are perceived in a long line, marching from the darkest parts of the forests: the buffaloes are there, depending upon numbers for security; the gazelles, relying solely on their swiftness; the lion and tyger, waiting an opportunity to seize; but chiefly the larger serpents are upon guard there, and defend the accesses to the lake. Not an hour passes without some dreadful combat; but the serpent, defended by its scales, and naturally capable of sustaining a multitude of wounds, is above all others the most formidable. It is the most wakeful also; for the whole tribe sleep with their eyes open, and are consequently for ever on the watch; so that, till their rapacity is satisfied, few other animals will venture to approach their station.

*The Boa.*

This is the most formidable genus of serpents. The species called *Constrictor* sometimes grows to the length of thirty or forty feet, and by twisting round another animal is able to crush it to death, and afterwards swallow it whole.

The *Spotted Boa*, another species, is as formidable as the *Constrictor*, and found in South America.

The *Boa Cannina* and *Boa Phrygia* are remarkable for the beauty and variety of their colouring.

Of the *Coluber*, 97 species are enumerated, among which is the *Berus*, a common British viper found in dry situations. It is from two to three feet long; its colour is a dirty yellow, and the back is marked with square black spots touching at the points, the sides with triangular ones, and the belly is black, and some are entirely black, though marked like the others; the tongue is forked, and the teeth small. They have four canine teeth, capable of being raised or depressed at pleasure; and through these they instil their poison. Sir Thomas Browne asserts that, when alarmed, their young seek shelter in the throat and belly of their parent. They live chiefly on frogs, toads, lizards, and mice, but endure long abstinence, and remain torpid throughout the winter. Their bite is venomous; but salad oil immediately applied is a certain remedy. In India they chew the root of the *lignum colubrinum*, and apply it to the wound. Many of this species are quite harmless, and some of them are six feet long. The water viper of Carolina catch fish with great dexterity, and often suspend themselves from the branches of trees to surprise birds. It has a horny substance at its end, as may be seen in the plate.

*The Crotalus, or Rattle-snake.*

The *Crotalus Horridus*, or American Rattle-snake, grows sometimes to the length of eight feet, and weighs between eight and nine pounds. The colour of the head is brown, the eye red, the upper part of the body of a yellowish brown colour, transversely marked with irregular broad black lists. The rattle is of a brown colour, composed of several horny membraneous cells, of an undulated pyramidal figure. These are articulated within one another in such manner that the point of the first cell reaches as far as the basis of the protuberant ring of the third, and so on; which articulation being very loose, gives liberty to the parts of the cells that are inclosed within the outward rings to strike against the sides of them, and so to cause the rattling noise which is heard when the snake shakes its tail. It is the most inactive and slow-moving of all the snakes, and is never the aggressor except in what it preys upon. Its bite is mortal, and no remedy has yet been discovered for it.

It is said that this animal has the power of fascinating its prey before it commences the attack; but, no doubt, this arises from the terror of the victim; the power of fascination being a chimera of superstition, like suction, attraction, repulsion, and the like.

Of the *Anguis* there are fifteen species, two of which, the eryx and blind or slow-worm, are found in England. They are about a foot long, and about the thickness of the finger; their motions are slow, and their eyes small. The belly of the eryx is of a light lead colour, marked with white spots, and a greyish brown, with three dusky lines. The slow-worm has a blunt tail; the back is a dark lead-colour, marked with black specks in lines; the sides reddish, and the belly dusky, marked like the back: it lives on worms in gardens. This is considered as the most venomous snake in England.

The *Amphisbæna* are so called because they move with either end foremost, from an erroneous opinion that they have two heads. They are but a foot long; but are divided into 200 segments and many longitudinal streaks: their colour is black, variegated with white. They live chiefly in the earth on worms.

*The Egyptian Viper*

Is abundant in Egypt; and is found in other parts of Africa, as well as in Asia.



*Cerestes, or Horned Viper*

Generally grows to the length of about a foot or fifteen inches, and is distinguished by a pair of horns, or curved processes, seated and projecting from above the eyes. It is a native of Africa, and is chiefly found in sandy deserts and dry places. It closely resembles the common viper: its bite is perhaps still more to be dreaded, since it possesses a propensity of springing with great suddenness to a considerable distance, and assailing, without provocation, those who approach it.

*Pambou-Rajah, or Royal Serpent,*

Is about 50 feet long, with its body much thicker than that of a man. It is found on the rivers of the western African coast, and in eastern India.

In the engraving the popular names have been for the most part adopted, as most intelligible to the general reader.

COBRA DI CAPELLO, OR HOODED SNAKE,

Is common in many parts of India. Its general length is three to nine feet, and its thickness in proportion. It is usually marked on the top by a very large and conspicuous patch, resembling a pair of spectacles. The usual colour of this snake is a pale rusty brown above, and beneath a bluish white yellow.

When it is irritated or preparing to bite, this animal erects its body, bends down its head, and seems, as it were, hooded by the expanded skin of the neck: hence its name of Cobra di Capello, or Hooded Serpent. It is reckoned the most deadly of all the serpents in the East Indies; but, on account of its sagacity, is considered an emblem of prudence, and held in great veneration by the natives. The engraving represents his position when he is about to strike an object. Death follows his bite within two or three hours.

SCOLIOPHIS ATLANTICUS, OR THE GREAT AMERICAN SEA-SERPENT

The evidence of numerous mariners proves that there exists in the sea, serpents of extraordinary length. In 1817, one was seen off New England by different persons. One made oath it was 100 feet long, and two feet in thickness; another 90 feet; another 70 feet; and another 120 feet; and all certified in regard to its unparalleled velocity through the water! A few days afterwards a small one, and evidently the progeny of the large one, was taken on shore; and from



this the present engraving has been made. In the general disposition of its colours, in the number, form, and arrangement, of the scuta and scutellæ, this animal approaches most nearly to the *Coluber Constrictor*.

*a. a.* represent portions of the head and throat so far destroyed that their structure could not be ascertained.

Fig. 1. Section of the body.

Fig. 2. Dissection of the same on the opposite side *A.A.A.* Muscles of the back. *B.* Lateral muscles. *C.* Intercostal muscles.

Fig. 3. Inside view of the cavity of the ribs and spine, with the internal muscles crossing the ribs.

Fig. 4. Side view of a vertebra.

Fig. 5. Front view of the same.

Fig. 6. Portion of the spine, shewing the varieties of the vertebræ, and the direction of the ribs.

Fig. 7. Portions of viscera of the first section. *A.* The lungs, their inequalities corresponding to the cavities in the spine. *B.* The mesentery, which is attached on each side to the ribs. *C.* The great vein. *D.* The *Œsophagus*.

Fig. 8. Represents an opening in the throat. *A.* The trachea. *B.* The *Œsophagus*, with a blowpipe inserted into its cavity. *C.* Elastic retractile filaments of the tongue. *D.D.* Extremities of the ribs.

### THE OURANG-OUTANG.

This animal has a flat face, with a deformed resemblance of the human; ears like those of a man; the hair on the head is longer than on the body. The body and limbs are covered with reddish and shaggy hair; longest on the back, thinnest on the fore parts. The face and paws are swarthy. They grow to the height of six feet; have prodigious strength, and are able to overpower the strongest man. They sleep in trees; and form rude shelters from the inclemency of the weather. They are of a grave appearance and melancholy disposition, and even when young not inclined to frolic. They walk erect, and are very swift.

### THE GIBBON, OR LONG-ARMED APE.

This animal is distinguished by the extraordinary length of its arms, which reach to the ground, when its body is upright, and give it a disgusting appearance. Its face is flat, and of a tawny colour, surrounded with a circle of grey hairs, which add to the singularity of its aspect; its eyes are large and deep sunk; its ears round and naked; and its body covered on all parts with black rough hair, except its buttocks, which are quite naked. It is of a mild, gentle, and tractable disposition; feeds on fruits, leaves,

and the barks of trees; and is a native of the East Indies, Sumatra, and the Molucca isles; and measures from three to four feet in height.

### THE GREEN MONKEY

Has a black and flattish face, the cheeks bounded by long white hairs, falling backwards, and almost covering the ears, which are black, and like the human; head, limbs, and whole upper part of the body and tail covered with soft hair, of a yellowish green colour at their ends, cinereous at their roots; under side of the body and tail, and inner side of the limbs, of a silvery colour: tail very long and slender; size of a small cat.

### THE GREAT BABOON.

This animal is from three to four feet high; very strong built; with a thick body and limbs, and large callosities behind, which are without hair, and red. Its tail is crooked, and about seven or eight inches long. Its snout is long and thick; and on each cheek is a pouch, for receiving its superfluous provision. It is covered with long thick hair, of a reddish brown colour; and walks more commonly on all-fours than erect. Its hands, as well as its feet, are armed with long sharp claws.

### THE BARBARY APE.

This species is very common in Africa, and is very untractable. Its head is large, and nose prominent; its face long, and not unlike that of a dog; its ears round like the human; the body is covered with hair of a brown colour, inclining to green; but lighter on the belly. It is from two feet and a-half to four feet high when standing erect.

### THE RIBBED-NOSE BABOON.

This singular creature is no less remarkable for its great size and strength, than for the variety of beautiful colours on different parts of its body. His head is very large, and his muzzle long. Its nose is marked with broad ribs on each side, of a fine violet blue-colour; a vermilion line begins a little above the eyes, and running down on each side of the nose, which is somewhat similar to that of a hog, spreads over the tip of it; the insides of the ears are blue, which gradually soften to a purple, and terminate in vermilion; the body is squat; the rump is also of a vermilion colour; and the beautiful colours on the hips are gradations from red to blue; the hair on the forehead is long, turns back, and forms a sort of pointed crest.



## THE SLOTH.

The appearance of this animal is so helpless as to excite compassion. It has three claws upon each foot, and a short tail; its fur resembles dried grass; the mouth wide; the eyes heavy; the legs and feet so awkward, that it requires a week to walk a short distance. When this animal makes a step forward, it scrapes on the back of the nails against the surface, and seldom moves more than three feet in an hour; it rarely changes its place, but when impelled by hunger. It is about the size of a cat, very ugly, and has claws extended like fingers; it feeds upon vegetables, and requires a considerable portion of provision.

## THE ANT-EATER.

This creature is a native of Brazil and Guiana. It is nearly four feet in length, exclusive of its tail, which is two and a half, and serves to cover the body when it rains; it is remarkable for its long snout, which is cylindrical, and serves as a sheath to its long and slender tongue, which always lies folded double in its mouth, and is the instrument by which it finds its sustenance; it lives wholly on ants, which it collects by thrusting its tongue into their nests, and withdrawing it loaded with prey.

## THE RHINOCEROS.

This animal is of a peaceful disposition, but, when hungry or injured by any one, he springs forward and attacks them furiously with his head, transfixing them with his horn. These animals never assemble together in troops like elephants, and never attack men except when provoked or first attacked; their skin is so extremely hard as to resist javelins, sabres, and even leaden musket-balls. They inhabit various parts of Asia and Africa, frequenting the banks of rivers and marshy places.

## ELEPHANT.

This animal is one of the most striking among quadrupeds, as well for its bulk as his sagacity and usefulness; its strength is so great, that he is competent to bear a load of nearly two thousand pounds; he will draw a carriage which six horses are scarcely able to move; and he will travel, when trained, on an emergency more than thirty leagues a day. The elephant is not only the most tractable, but the most intelligent, of animals, sensible of benefits and resentful of injuries. They are natives of Africa and India, and were formerly attached by Eastern



#### XIV. DESCRIPTION OF THE ENGRAVINGS IN PART IV.

monarchs to armies; and used in battle; but have been found more injurious than useful since the invention of gunpowder. They live to the age of two or three hundred years, and continue to grow for nearly a century. Next to the human hand, their proboscis is the most useful implement attached to any animal; they can pick up a pin with it, or twist it round a horse and his rider, and thrown them into the air.

#### ARCTIC WALRUS, OR SEA-COW.

This amphibious creature is a species of seal, but much larger, being sixteen or eighteen feet long, and differing in the shape of its head, and in having two tusks, which she can use for various purposes. They are very sagacious, gregarious, and affectionate, and subsist entirely on shell-fish and marine plants, within the polar circles.

#### WOLF.

The Wolf is one of those quadrupeds, whose appetite for animal food is the most vehement, and whose means of satisfying it are various, as nature furnishes him with strength, cunning, and agility. He is naturally dull and cowardly; but, when pressed by hunger, he ventures to attack animals under the protection of man. These ferocious animals are natives of almost all the temperate and cold regions of the globe, but, happily, have long ceased to roam in the British Islands. The present subject is from RIDINGER.

#### LION.

The Lion's external appearance is not only majestic, but his gait proud, and voice terrific; he is a perfect model of strength, associated with agility. The Lion whose figure accompanies the present account, was one of the most beautiful animals ever seen in captivity; he was caught between Constantine and Bonne, in the dominion of Algiers, after a chase of three days; was presented to the French republic, and kept many years in the Garden of Natural History at Paris.

#### A LIONESS AND HER WHELPS.

The Lioness is equally terrific with the Lion, and, when her cubs are endangered, will attack every species of animal. She has recourse to stratagem, and conceals herself by laying on her belly, and there waits till her prey or enemy comes within her reach, when she suddenly springs on her victim. This individual was also kept in the French Museum.

## TYGER.

This animal is of the most ferocious nature, and it partakes of the noxious qualities of the Lion, without possessing any of his good ones; is fierce without provocation, and destroys every thing that falls in his way indiscriminately; and such is the malignity of his disposition, that he not unfrequently ventures to attack the Lion itself: so great is the strength of this creature, that, when it kills an animal, such is his thirst for blood, that he will leave it, and seize upon a new prey with equal fury. He often devours his own young, and tears the mother in pieces for endeavouring to defend them; his usual method of taking his prey is, by concealing himself, and springing suddenly on his victim. The female produces four or five young at a litter, and is as furious as the male.

## BEARS.

In a native state, Bears are found in most of the Northern districts of Europe, Asia, and America, and in some parts of Norway. There are four species; the Black, the Brown, the White, and the Kamtschatkan. The Black or American Bear inhabits chasms and precipices, and often chooses for his abode the hollow of some tree; there he lives for months in the winter without provisions, and seeming to exist on the exuberance of its former flesh, which it had acquired in the summer. The female generally prepares a bed in the hollow of a rock, and brings forth in winter: they subsist entirely on vegetables. The Brown or Alpine Bear is solitary, and is the species usually led about the streets by Savoyards, by whom they are in a cruel manner taught to dance. The White or Greenland Bear measures from ten to thirteen feet in length, and is the largest animal of the polar regions, where they range on the ice and snow, and are very ferocious. The females are remarkable for their affection for their young.

## PORCUPINE.

This animal is a native of Africa, India, and the Indian Islands; it sleeps during the day, and makes its excursions for food in the night, and always eats with a voracious appetite. The Porcupine is harmless, and never the aggressor; but, when pursued, it climbs into a tree, until the adversary's patience is exhausted: at the approach of an enemy they gore him with their erected prickles. When the Porcupine meets with serpents, he closes him-



self up like a ball, then rolls upon, and kills them with his bristles, without any risk of being wounded himself.

### KANGAROO.

These animals sometimes measure seven feet in length, from the tip of the nose to the end of the tail, and weigh one hundred and fifty pounds; the fore-legs are seldom more than nineteen inches in length, while the hind ones are three feet and a half; and of such prodigious strength as to be able, when used as a weapon of defence, to break a man's leg at a single blow. From its general form and structure, its chief progressive motion is by leaps, and in these exertions it has been seen to exceed twenty feet at a time, bounding over obstacles nine feet or more in height, so as to elude the swiftness of a greyhound.

### THE JERBOA.

This animal, remarkable for the singular construction of its legs, is found in Egypt, Barbary, and Palestine.

It is somewhat less than a rat; its eyes are large and full; the fore legs are only one inch in length, and are used as hands to convey victuals to its mouth; the hind legs are naked, and very much resemble that of a bird, having only three toes on each, the middle one longest; its tail is much longer than its body, and terminated with a black tuft, the tip of which is white; its hair is long and soft, of a reddish colour on the back; the under parts of the body are white: across the thighs there is a large black band, in the form of a crescent.

Its motions are similar to those of the kangaroo, going forward very nimbly on its hind feet, and taking leaps of five and six feet from the ground. It is a lively, harmless animal, lives entirely on vegetables, and burrows in the ground like a rabbit.

### CAMEL.

Camels in hot climates are universally employed as beasts of burden, and perform the same offices as the Horse in Europe; their pace is usually slow, but they are able to sustain themselves on long journeys with a very small portion of food, and undergo privations of water for many days, a reservoir of which they carry in a fifth stomach. They have four other stomachs, so that they live not only on vegetable food, but ruminate the cud. There are two species of Camels, one the Bactrian or Taurida Camel, which has two hunches on its back; and the other, the Arabian Camel or Dromedary, which has but one hunch, and is smaller, lighter, and more

alert: both animals are represented in the engraving; and, as the recumbent position of these animals is peculiar, one of the figures has been given in that position.

### HIPPOPOTAMUS.

These animals inhabit the rivers of Africa, and are the same as described by Job under the name of the Behemoth. They are perfectly harmless, living entirely upon vegetables, though the wantonness of man occasions them to be frequently wounded and destroyed. They walk at the bottom of the water, but are often seen presenting their enormous heads above its surface to respire air. When attacked, they have been known to rise under a boat and upset it, or tear out its sides with their teeth, and sink it. This animal belongs to the sixth order of Linnæus, called *Belluæ*, which have cutting teeth in each jaw, and is also known under the name of the River Horse.

### THE BOTTLE-NESTS OF THE BAYA, OR AFRICAN ORIENTAL SPARROW.

The Baya, or Bottle-nested Sparrow, is remarkable for its pendent nest, brilliant plumage, and uncommon sagacity. The head and breast are of a bright yellow, and in the rays of a tropical sun have a splendid appearance; they make a chirping noise, but have no song: they associate in large communities, and cover extensive clumps of palms, acacias, and date trees, with their nests, which are formed in a very ingenious manner, by long grass woven together in the shape of a bottle, with the neck hanging downwards, and suspended by the other end to the extremity of a flexible branch, by which they effectually secure the eggs and young brood from serpents, monkeys, squirrels, and birds of prey.

### RED-THROATED HUMMING-BIRD.

Humming-birds are chiefly remarkable for their diminutive size, being the smallest objects in ornithology. The plate represents the exact size of this species, which appears to be about two inches long; but the smallest species, called the *fly-bird*, is not more than an inch and a quarter long, and when dead weighs but twenty grains.

### THE TAILOR BIRD.

This is one of the most pleasing objects in the whole compass of natural history, and exhibits so much design, ingenuity, and purpose, that no person who contemplates it can



question the reasoning powers of the interesting artists who effect the construction. Two leaves are sewed together with vegetable fibres, and the beak performs the office of drilling the necessary holes, and passing the fibres through them with the dexterity of a tailor. Even such parts in the rear as are not sufficiently firm are sewed in like manner, and when two growing leaves are not conveniently situated, these ingenious creatures sew a dead leaf to a living one, and thus effect their purpose. The birds which display such dexterity are somewhat smaller than the English wren, and they are to be found in various parts of India. Nevertheless, though we feel the more surprised at contemplating this novelty to our climate, yet the whole system of building their nests by different birds, as well in the tailor bird as in the swallow, the bottle-nested sparrow, &c. &c. evinces so much deliberate design and choice, as to baffle every attempt to explain it on the principle of mechanical instinct.

### THE PAINTED OR ARGUS PHEASANT,

So called from the number of eye-like spots with which its wing-feathers are covered, is found in the northern parts of China, and in several of the interior districts of India and Sumatra. They are nearly as large as peacocks, and rank among the most beautiful of the feathered creation.

### THE OSTRICH.

The ostrich is the largest of all birds; it frequently attains the height of seven or eight feet. Its long and slender neck is clad only with a kind of down. The head is small in proportion to the body; but the eyes are large and vivid. The beak is short, blunt, and flattened horizontally. The wings are extremely short, when compared with the size of the body; and they are furnished only with those waving and flexible feathers used as ornaments in dress. The thighs and legs are of astonishing strength. The feet have only two toes each, of which the outer one is much shorter than the other, and have no nail or claw.

The male is generally of a brown-black colour, the plumage intermixed with white feathers. The female is entirely of a uniformly greyish brown.

They are the swiftest footed animals known, using their wings only to assist their legs, like a man in running. In Africa, they are occasionally used to carry burthens, and even to ride upon, being strong enough to carry two men upon their backs with great celerity.

## FLAMINGO.

This bird resembles the heron in shape. Its colour is entirely red, except the quill-feathers, which are black. A full-grown bird, when erect, stands five feet high. The feet are webbed. These birds make their nests on hillocks in shallow water; on which they sit with their legs extended down. They breed on the coasts of Cuba and the Bahamas, and frequent salt-water only. By reason of the particular shape of its bill, this bird, in eating, twists its neck from side to side, and makes the upper mandible touch the ground.

## SCARLET IBIS.

The ibis was formerly held in great veneration in Egypt, on account of its utility in freeing the country from serpents. They still continue to frequent the great stagnant pools common in Ethiopia.

## THE PELICAN.

This bird is much larger in the body than a swan. Its toes are webbed; and its neck resembles that of a swan; but its bill is fifteen inches from the point to the opening of the mouth, which is far back behind the eyes. The under-chap is very extraordinary; for to its lower edges hangs a bag, reaching the whole length to the neck, and capable of containing fifteen quarts of water; and, when this bag is empty, it is not seen; but, when the bird has fished with success, its extent is then incredible.

The pelican has strong wings, furnished with thick plumage, with the feathers over the body of an ash-colour. Its eyes are small, compared with the size of its head; its countenance sad, and its whole air melancholy. It is slow in flight, and rises to fly with difficulty and labour.

## THE NUMIDIAN, OR BALEARIC CRANE.

The *demoiselle* of Numidia has been celebrated, by all ornithologists, as a most elegant bird. It has all the proportions and shape of the crane, only on a smaller scale; its port, its garb, are the same; and the same distribution of colours on the plumage, only the grey is purer, and more pearly. This beautiful bird received the name of *demoiselle*, or *miss*, on account of its elegant form, its rich plumage, and its affected airs: it makes repeated gesticulations; it walks with sprightly ostentation, and it often leaps and springs from gaiety, as if it were preparing to dance.



## CRANIOLOGY.

The modern science of phrenology or craniology, though carried too far, yet being a study which has obtained a considerable share of public attention, the plate of the usual divisions of the cranium has been introduced, and the following are the passions or subjects assigned by the system to the several parts.

*Organs of the Brain, according to the System of Drs. Gall and Spurzheim.*

1. The organ of sexual instinct. Fig. II. III.
2. The organ of parental and filial love. Fig. II. III.
3. The organ of susceptibility for instruction, *memoria realis*. Fig. I. II.
4. The organ of finding and remembering places. Fig. I. II.
5. The organ of recollecting persons (in the eye-hole). Fig. I. II.
6. The organ of comparing colours. Fig. I. II.
7. The organ of music. Fig. I. II.
8. The organ of arithmetic. Fig. I. II.
9. The organ of finding and remembering words (in the eye-hole). Fig. I.
10. The organ of philosophy (in the eye-hole). Fig. I.
11. The organ of mechanical arts. Fig. I. II.
12. The organ of friendship and attachment. Fig. II. III.
13. The organ of fighting. Fig. II. III.
14. The organ of murder. Fig. II. III.
15. The organ of cunning. Fig. II. III.
16. The organ of thieving. Fig. I. II.
17. The organ of loftiness and high-mindedness. Fig. III.
18. The organ of thirst for glory, and of vanity. Fig. III.
19. The organ of reflection. Fig. II. III.
20. The organ of ingenuity. Fig. I. II.
21. The organ of philosophical judgment (includes No. 20.) Fig. I. II.
22. The organs of wit. Fig. I. II.
23. The organ of induction (includes the organs Nos. 20, 21, and 22.) Fig. I. II.
24. The organ of meekness or good-nature. Fig. I. II.
25. The organ of religious fanaticism. Fig. I. II. III.
26. The organ of constancy. Fig. II. III.
27. The organ of imitative power (includes No. 24.) Fig. I. II.

## PHYSIOGNOMY.

This engraving exhibits a classification of the human countenance, as found in different nations and particular families.

Man, being endowed with intelligence, presents the impression of them by his exterior form, and by features which distinguish him from all other animals. Accordingly,

the form of his face is the more beautiful the more it is peculiarly his own, and less resembles any other; it is the more disgusting, the more sensibly it recalls that of any beast.

The 2d and 7th figures in the plate represent the human face in its perfection; the 11th and 14th, inclusive, represent it debased and approaching that of some other animal. Among the vast variety presented by the countenance of animals, the human is distinguished by its regularity. In front, it forms an exact oval, the parts of which are regularly divided, and preserve a symmetrical relation to each other. It is in this front part that animals principally differ from each other and from man; nature appearing to have established this visible correspondence between its exterior form and the quality of the faculties. The human head presents in its front part, as we have just observed, the exact shape of an egg; that is to say, of an oval, wider above than below. In dividing this oval into two diameters, the largest, marked A and B, will part into two equal portions, the forehead, the nose, the mouth, and the chin.

The smallest will divide the head into two equal portions, at the origin and extremity of the eye-brows, or sometimes to the middle of the orbicular cavities. See the same Fig. line C D. These two parts, divided again into halves, will give, one the origin of the hair, the other the extremity of the nose. The fourth part divided into three gives the place of the mouth and the origin of the chin.

The base of the nose forms, with its most prominent part, an equilateral angle, which ought to be of the size of the mouth, or of the eye; there is between the two eyes the space of an eye or nose. The nose and the forehead will only be separated by a slight and almost imperceptible inflection. The upper part of the forehead, and the lower part of the chin, will be a little depressed, to soften the oval, and give it a more regular form. This may be perceived in the regular profile, Fig. 18. In Fig. 15, 16, 17, 25, and 26, the beauty is injured, because the face is constructed on a line too convex or concave, too flat, too long, or too wide. Figures 21, 22, 23, and 24, are caricatures taken from *Leonardi da Vinci*.

## PLATES OF ANATOMY.

### FRONT OF THE HUMAN SKELETON.

#### *Head and Neck.*

- A Os frontis, or frontal bone
- B The parietal bone
- C Temporal process of the sphenoid bone
- D Squamous part of the temporal bone
- E Mastoid process of that bone
- F Malar, or cheek bone



xxii. DESCRIPTION OF THE ENGRAVINGS IN PART IV.

*G* The nasal bone, behind which is the nasal process of

*H* The superior maxillary bone

*I* The lower jaw.

*Trunk.*

*A* The sternum

*B* The seventh, or last true rib

*C* The cartilages of the ribs

*D* The twelfth, or last false rib

*E* The lumbar vertebræ, with their intervertebral cartilages and transverse processes

*F* The os sacrum

*G* The os innominatum, composed of

*a* The os ilium

*b* The os pubis

The os ischium.

*Superior Extremity*

*A* The clavicle

*B* Inner surface of the scapul

*a* The acromion of the scapula

*b* The coracoid process of that bone

*C* The os humeri

*c* The head, or ball of the os humeri

*d* Internal tubercle of the os humeri; and, farther out, the groove for lodging the tendon of the long head of the biceps muscle

*e* The inner, and

*f* The outer condyle of the os humeri. Between *e* and *f*, the hollow for lodging the coronoid process of the ulna in the flexion of the fore-arm

*D* The radius

*f* The head of the radius

*E* The ulna

*h* The coronoid process of the ulna

*F* The bones of the carpus

*G* The metacarpal bone of the thumb

*H* The metacarpal bones of the fingers

*I* The two bones of the thumb

*K* Three phalanges of the fingers.

*Inferior Extremity.*

*A* The os femoris

*d* The ball, or head of this bone, lodged in the acetabulum

*e* The cervix of the bone

*f* The large trochanter

*g* The small trochanter

*h* The inner condyle

*B* The patella, placed upon the trochlea of the os femoris

*C* The tibia

*k* The head of the tibia, between which and the condyles of the os femoris, the semi-lunar cartilages appear

*l* The tubercle of the tibia

*m* The malleolus internus

*D* The fibula, the upper end of which is connected with the tibia

*n* The malleolus externus

- E* The bones of the tarsus
- o* The projection of the os calcis
- F* The metatarsal bones
- G* The phalanges of the toes.

## BACK OF THE HUMAN SKELETON.

### *Head and Trunk.*

- A* The parietal bone
- a* The sagittal suture and parietal hole
- B* The occipital bone
- b b* The lambdoid suture
- C* The joining of the temporal and parietal bones
- D* The cheek bone
- E F* The inner or back part of the jaws, with the teeth
- G* The first cervical vertebræ
- H* The second cervical vertebræ
- I* The seventh cervical vertebræ
- c* The spinous processes of the cervical vertebræ
- k* The first dorsal vertebræ
- L* The twelfth dorsal vertebræ
- d* The spinous processes of the dorsal vertebræ
- c* Their transverse processes
- M* The first lumbar vertebræ
- N* The fifth lumbar vertebræ
- f* Their spinous, and
- G* Their transverse processes
- W* The os sacrum
- h* The uppermost spinous process. Farther out are seen the superior oblique processes of this bone, joined to the inferior oblique of the last lumbar vertebræ
- i i* The lateral parts of the os sacrum, joined to the ossa innominata. Between *i* and *o*, the posterior foramina of the os sacrum
- k* An opening in the under and back part of this bone, covered in the subject by a ligamentous membrane
- P* The os coccygis, joined by its shoulders to the os sacrum at the lower part of the opening *k*
- Q* The os ilium
- R* The os pubis
- S* The os ischium
- T U* The seven true ribs
- v v* The five false ribs.

### *Superior Extremity.*

- A* The clavicle
- B* The dorsum scapulæ
- a* The spine of the scapulæ
- b* The acromion of the scapulæ
- c* A fossa for lodging the supra-spinatus muscle
- d* An irregular surface, occupied by the infra-spinatus muscle
- C* The os humeri
- e* The ball of the os humeri
- f* The external tubercle of the bone



XXIV. DESCRIPTION OF THE ENGRAVINGS IN PART IV.

- g* The external condyle
- h* The internal condyle
- i* Cavity for lodging the olecranon of the ulna
- D* The radius
- h* The head of the radius articulated with the trochlea of the o.  
humeri
- l* The under end of the radius, grooved by the tendons of th.  
muscles
- E* The ulna
- m* The olecranon of the ulna
- n* The under end of the ulna, with its styloid process
- F* The bones of the carpus
- G* The metacarpal bone of the thumb
- H* The metacarpal bone of the fingers
- I* The two bones of the thumb
- K* The three phalanges of the fingers.

*Inferior Extremity.*

- A* The os femoris
- a* Part of the ball of the os femoris
- b* The cervix of the bone
- c* The trochanter major
- d* The trochanter minor
- e* The cavity for lodging the popliteal vessels and nerves
- f* The external condyle
- g* The internal condyle
- h* The semi-lunar cartilages
- B* The tibia
- i* The head of the tibia
- h* The malleolus internus
- C* The fibula
- l* The head of the fibula
- m* The malleolus externus
- D* The bones of the tarsus
- n* The astragalus
- o* The os calcis
- p* The fore-part of the tarsus
- E* The bones of the metatarsus
- F* The phalanges of the toes.

THE SKULL, CUT PERPENDICULARLY.

- A* The os frontis
- B* Sinus Frontalis
- CC* Os bregmatis
- D* Os occipitis
- E* Os petrosum
- F* The seventh foramen, through which the auditory nerve passes
- G* The ninth foramen
- H* Processus clinoides
- I* Sella turcica
- K* Crista galli
- L L* Sinus sphenoidalis
- M* Os nasi

DESCRIPTION OF THE ENGRAVINGS IN PART IV. XXV.

- N* A process of the os ethmoides, that makes part of the septum nasi  
*O* Part of the os sphenoides, that makes part of the septum nasi  
*P* Os vomer  
*Q* The suture of the upper jaw  
*R* Processus pterygoides  
*S* Maxilla superior  
*T* The styloid process  
*U U* Sutura sagittalis  
*V* The spongy substance of the os sphenoides  
*W* Part of the diploe of the os occipitis.

THE UNDER SIDES OF THE BONES OF THE FOOT.

- A* The os calcis  
*B C D* Three protuberances of the os calcis  
*E* The smooth part of the astragalus which joins the os naviculare  
*F* The upper side of the astragalus which articulates with the tibia  
*G* Os naviculare  
*H* Os cuboides  
*I* A sulcus in the os cuboides  
*K* Os cuneiforme majus  
*L* Os cuneiforme maximum  
*M* The metatarsal bone of the great toe  
*N* The part upon which the sesamoid bones are moved  
*O* The first bone of the great toe  
*P* The last bone of the great toe  
*Q Q Q Q* The metatarsal bones of the four smaller toes  
*R R R R* The first bones of the four smaller toes  
*S S S S* The second bones of the four smaller toes  
*T T T T* The last bones of the four smaller toes.

THE BACK OF THE HAND.

- 1 2 3 5 6 7 8* Seven of the bones of the carpus  
*A A A* The three bones of the thumb  
*B B B B* The metacarpal bones of the fingers  
*C C C C* The second bones  
*D D D D* The second bones  
*E E E E* The third bones.

THE BRAIN,

*In a perpendicular direction.*

- a a* A section of the cranium  
*b* Part of the right frontal sinus  
*c* Part of the right sphenoidal sinus  
*d* The septum narium, composed above of the nasal plate of the ethmoid bone, below of the vomer, and before of cartilage  
*e* The opening from the left nostril into the throat  
*f* The roof of the mouth, and teeth of the left side of the upper jaw  
*g* The cancelli of the cuneiform process of the occipital bone  
*h* The root of the falx, the rest being removed to shew the convolutions of the inner side of the left hemisphere of the brain



XXVI. DESCRIPTION OF THE ENGRAVINGS IN PART IV.

- i* Part of the tentorium cerebelli, and the situation of the torcular herophili
- h* The termination of the superior longitudinal sinus
- l* A section of the corpus callosum
- m* The septum lucidum, and situation of the right lateral ventricle
- n* The body of the fornix
- o* The two anterior crura of the fornix, one of which is cut and turned forwards
- p* A section of the anterior commissure of the brain
- q* The passage by which the two lateral ventricles communicate with each other, and with the third ventricle
- s* The infundibulum, at the bottom of the third ventricle
- t* The glandula pituitaria, lodged in the sella turcica
- u* A section of the right optic nerve
- v* A section of the right corpus albicans
- w* Part of the choroid plexus
- x* A vein running upon the right side of the septum lucidum, to terminate in the choroid plexus
- y* The pineal gland, at the root of which is a section of the posterior commissure of the brain
- z* A section of the nates
- 1* A section of the testes
- 2* The valve of vicussens
- 3* The arbor vitæ of the cerebellum
- 4* A passage to the fourth ventricle
- 5* The cavity of the fourth ventricle, the under end of which is shut by the choroid plexus and via mater
- 6* A section of the tuber annulare
- 7* Of the medulla oblongata
- 8* Of the spinal marrow
- 9* The basil artery

*The base of the Brain.*

- a a* The anterior lobes of the brain
- b* The division of the anterior lobes, on each side of which is a groove, where the first pair of nerves were situated
- c c* The lateral lobes, separated from the anterior by the fissure of sylvius
- d d* The posterior lobes
- e* The infundibulum, placed behind the union of the optic nerves and before the corpora albicantia
- f f* The cerebellum divided into its two lobes or hemispheres
- g g* The superior and anterior lobules, called also the superior and anterior vermiform processes of the cerebellum
- h h* The crura cerebri
- i i* The crura cerebelli
- k* The tuber annulare, in the middle of which is an impression made by the basilar artery
- l* The medulla oblongata composed of two lateral portions, with a fissure between them
- m m* The corpora pyramidalia
- n n* The corpora olivaria.

*Contents of the Thorax and Abdomen, after removing the Parts which cover them.*

- A* The right lung, part of which is cut off from *B* to shew the large blood-vessels
- B* The left lung
- C* The right ventricle of the heart, with the point of the left ventricle
- D* The right auricle of the heart
- E* The vena cava superior
- F F* The subclavian veins
- G G* The internal jugular vein
- H* The aorta ascendens
- I* The pulmonary artery
- K K* The diaphragm
- L L* The right and left lobes of the liver, with the vestige of the ligamentum latum between them
- M* The ligamentum rotundum
- N* The fundus of the gall bladder
- O* The stomach, pressed by the liver towards the left side
- P* The spleen
- Q Q* The situation of the kidneys behind the intestines
- R R R* The convolutions of the small intestines.

FIG. I.

*The Head in the region of the Ear.*

- A* The external carotid
- B* The internal carotid
- C* The auricularis posterior
- D* The pharyngea ascendens
- E* The internal maxillary artery
- F* The porlio dura of the auditory nerv
- G* The malleus
- H* The incus
- I* Part of the membrana tympani
- K* The upper ganglion of the sympathetic nerve
- L* Nervus vagus
- M* The facial branch
- N* The styloid process.

FIG. II.

*The Ear.*

- A* The helix
- B* The antehelix
- C* The tragus
- D* The antitragus
- E* The lobe
- F* The cavitas innominata
- G* The scapha
- H* The concha
- I* Meatus auditorius
- K* The eustachian tube.



FIG. III.

*Fallopian Tube.*

*A* The fallopian canal

*B* The labyrinth.

FIG. I.

THE RIGHT EYE,

*With its Muscles viewed obliquely from its Upper and Outer Side*

- a* The eye-ball
- b* Parts of the upper eye-lid
- c* The tunica adnata adhering to the edge of the cornea
- d* The integuments of the right side of the nose
- e e* The optic nerve
- f* The four straight muscles with the levator palpebræ superioris and obliquus superior embracing the optic nerve, where it enters the orbit
- g* The levator palpebræ superioris drawn aside
- h* The levator oculi
- i* The abductor oculi
- k* The adductor oculi
- l* The depressor oculi
- m* The obliquus superior or trochlearis
- n* The trochlea of the superior oblique
- o* The insertion of the tendon of the obliquus superior in the eye-ball
- p* The inferior oblique muscle taking its rise from the superior maxillary bone
- q* The insertion of the tendon of the inferior oblique muscle in the eye-ball.

FIG. II.

THE COATS OF THE EYE

- a* The optic nerve
- b b* The sclerotic coat cut and turned outwards
- c* The sclerotic coat cut and turned forwards, with
- d* The cornea
- e e* Half of the iris in its place, the other half being removed
- f* The pupil with the crystalline lens in its place
- g* The ciliary circle
- h h* The choroid coat
- i* The ciliary processes seen in their places, by cutting off a portion of the iris
- k* A portion of the iris cut and turned back
- l* The floating points of the ciliary processes also turned back
- m* The middle smooth part of the retina seen by cutting a hole in the choroid coat
- n* The roots of the ciliary processes of the retina to which the black part of the ciliary processes of the choroid coat adheres
- o* The ciliary processes of the retina inserted into the capsule on the crystalline lens.

## FIG. III.

*The Passages of the Tears.*

- a* The lacrymal gland ; shewing its natural situation with respect to the eye-lids
- b b* The eye-lids widely opened
- c* The situation of the pometa lacrymalia
- d d* The ducts continued from the pometa lacrymalia
- e e* The angles the ducts form after leaving the pometa
- f* The termination of the lacrymal ducts in
- g g* The lacrymal sac
- h* The nasal duct continued from the lacrymal sac.

## FIG. IV.

*Longitudinal Section of the Left Eye and Orbit.*

- a* The upper eye-lid shut
- b* The cornea
- c c* The cut edge of the iris
- d* The pupil
- e e* The cut edge of the sclerotic and choroid coats with the retina
- f* The crystalline lens
- g g* The ciliary processes continued from the choroid coat
- h* The optic nerve running in a waving direction to the ball of the eye
- i* The levator palpebræ superioris
- k* The levator oculi
- l* The depressor oculi
- m* A section of the obliquus inferior
- n n* A section of the blood vessels and nerves, with a large quantity of fat surrounding the optic nerve.

CHART shewing the NUMBER of DEATHS arising in one Year from different Diseases, within the London Bills of Mortality during the Years 1796, 97, 98, 99, and 1800, on an Average.

Connected with the history of man, it is curious to see at one glance the proportionate diseases which terminate human life in the British metropolis. The longest line is *consumption*, while no less than fifty-five generic diseases, of which there are numerous species, contribute to the destruction of our race. Of the average of life we have a melancholy exhibition in the fact that six times as many die under five years of age as exceed eighty. Taken altogether, the table is a moral lesson.

## TATTOOED SOUTH-SEA ISLANDER.

Nothing connected with human practice and character can be more striking than the mode of ornamenting their skins,



XXX. DESCRIPTION OF THE ENGRAVINGS IN PART IV.

practised by many semi-barbarous tribes. It corresponds with the love of finery, showy colours, and extraneous ornaments, which is indulged in by the whole human race. The historian and antiquary cannot fail to be struck with the similarity in effect which exists between the decorations of the South Sea islanders and the armed warriors of antiquity. The process by which the effect is produced is tedious, laborious, and highly painful.

## LECTURE L.

## AMPHIBIOUS ANIMALS.

THIS class includes Tortoises, Frogs, and Lizards. Their bodies being cold as their blood, they are very tenacious of life ; they can long endure hunger ; and can re-produce certain parts of their bodies, lost by accident. Their form differs much from other animals ; and some of them are noxious, and some are decked in very splendid skins. They either are dumb, or have a very unmusical tone. Most of them are oviparous ; their eggs have soft shells, which, however, they do not themselves hatch, but commit them to the warmth of the air or water, as lizards and frogs ; or to the hot sand, as the crocodile, iguana, and turtle ; or to dung, as the serpent race. They mostly swallow their prey whole, and digest it slowly. Their abode is in retired, watery, or dirty places ; and many can remain a long time in either air or water, on which account they are called amphibious. Most of them secrete themselves, and sleep through the winter.

The amphibious animals have ever excited in mankind a degree of abhorrence, originating in the unpleasant sensation of touching perfectly cold animals, and in their ugly and squalid forms. This irrational feeling is general among all people, even where the species are in themselves innoxious and beautiful.

Nearly all the amphibia are furnished with teeth, but these seem of little other use than for seizing and retaining their prey ; as all their food is swallowed whole.

Their respiration is not, as in the higher animals, carried on at certain short and regular intervals. The amphibia, from the peculiar structure of their organs of respiration, are able to suspend it almost at pleasure. It is in consequence of this, that they are enabled to support their change of element without injury. Their blood is red, but cold, and in small quantity.



The bodies of some of these animals are protected by a hard and horny shield or covering. Some of them have scales; and others soft pustular warts, or protuberances. Their bones are more cartilaginous than those either of quadrupeds or birds. Several of the species, as the frogs and some of the lizards, are altogether destitute of ribs.

The eyes of the amphibia are in general large and bright. The ears have neither external valve nor canal; but the tympanum is level with the head, and, in many of the animals, covered with the skin or scales. Some of the amphibia will continue to move and exert animal functions, even destitute of their head or heart.

In cold and temperate climates, nearly all the amphibia pass the winter in a torpid state. During this season they are often found perfectly stiff, in holes under ice, or in water. They continue thus till revived by the returning warmth of spring; they then become reanimated, change their skin, and appear abroad in a new coat. Many of them cast their skins frequently in the year; but tortoises, and some other reptiles, have an osseous covering, which they do not change.

Amongst many examples of living toads in stones, the following place the matter beyond all doubt:

A living toad was found in a large stone at Newark on Trent, in England. It was of a white colour, measured three and a half inches, but appeared incapable any more of bearing the light, and an hour afterwards it died; but in this time it was seen by several hundred people.

In a stone quarry, near Cassel, some workmen discovered three living toads lying together in a stone four feet long, three feet broad, and as many high, on the outside of which, before it was broken, not the slightest trace of an aperture was to be discovered. It was with difficulty that these animals could be brought from the spot they lay in; and, as soon as they were taken out, they hopped in again. They appeared at first to be quite lively in the grass, but they died in half an hour.

An English naturalist made a trial how long he could keep a toad without nourishment; he placed it in a pot, and buried it in the ground, closing it carefully. He forgot by chance to dig up the pot, until

two or three years were elapsed, when he found his toad still living.

Many well-attested instances have been published of toads found in stones, in which they must have been entombed, during the petrification, thousands of years before, and which have lived long enough to prove that they were in health when disentombed. Thus, a few years ago, in repairing Ealing church, on breaking an old stone, which had belonged many hundred years to the building, a live toad was disengaged.

Accounts of animals found imbedded in the hearts of trees, and in solid rocks, are so well authenticated, as to establish beyond question the existence of those extraordinary phenomena. The history of a recent specimen of this kind, is curious:—Among the woods imported into this country for veneering and other ornaments of furniture, one of the dryest, hardest, and most beautiful, is the zebra wood. In December, 1822, in adzing the edges of an inside plank of this tree, about two inches within the edge of the plank, a species of *cerambyx* was discovered. Its position was longitudinal with the grain of the wood; and the sides of the cavity containing it were smooth. The wood itself was perfectly dry, and had been brought to the saw-mill, near Stratford, in Essex, from the London Docks, where it had lain many years. On the 31st of December, the specimen was in a torpid state, and apparently dead; but, on bringing it near the fire, it recovered its vivacity, and ate some brown sugar very greedily. Being placed in a warm situation, it lived till the 15th of January, taking very little nourishment except milk or water.

There was another specimen in the same log of wood, which was destroyed by the teeth of the saw. The animal was two inches long; the colour darker than a cinnamon-brown; his head was armed with two delicate feelers, twice the length of his body: while alive, it usually carried these antennæ over its back, but occasionally brought them forward. Having ten joints in each, it had the power of folding them on its body.

A clerk in one of the courts at Guildhall had been often staggered, if not frightened, during his labours, by the sound of something like what superstition has named the *death watch*. His old desk had been an appendage for a number of years; and one day, his attention being peculiarly attracted by the ticking noise, he saw a minute hole perforated to the surface from the inner wood, and soon after a portion of the insect-instrument by which this operation was performed, protruded. With his penknife he enlarged the orifice, and ulti-



mately succeeded in digging out an animal resembling the *cerambyx* of the zebra wood, but of brilliant colours and smaller dimensions.

Toads possess the property of sleeping and remaining in a state of torpor during the winter, without having any occasion for nourishment during the whole period. Frogs are often to be found, in winter, in ice; and, on its thawing, they are again revived. And it is well known, that frogs and toads, when the weather is warmer than usual in the spring, come forth from their holes in the earth, and commence a new life.

A pit having been opened, in the summer of 1814, at Elden, Suffolk, for the purpose of raising chalk, a gentleman discovered two lizards imbedded in the solid chalk, fifty feet below the surface. So completely devoid of life did the lizards appear on their first exposure to the air, that they were actually considered in a fossil state. On attempting to take them up, they moved; and, on being placed in the sun, the heat soon restored them to animation. In this state one was immersed in water, and the other kept in a dry place. The mouths of the lizards were closed up with a glutinous substance. This obstruction seemed to cause them great inconvenience, from the agitation perceptible in their throats, and the frequent distention of the jaws, or around the jaws and the head; indeed, they seemed in a state little short of suffocation. The newt which had been immersed in water, after many violent struggles, was at length enabled to open its mouth; this afforded it instant relief, and it evidently derived much satisfaction and comfort from its new element. The other lizard, notwithstanding its repeated endeavours, was unable to open its mouth. It died in the course of the night, probably from being debarred the use of its proper element. The remaining lizard continued alive in the water for several weeks, during which it appeared to increase in size. It disliked confinement; and, after many attempts, at length effected its escape.

In 1810, as two sawyers were employed in cutting up an oak tree, about thirteen inches in thickness, at Rainford, in Lancashire, the man in the pit perceived something move, which, on examination, proved to be a full-grown toad. The animal was

quite alive when taken up, notwithstanding one of its legs had been cut off by the saw. The cavity in which it was found was exactly in the centre of the tree, just large enough to contain the body. In the tree, not the least track or aperture could be discovered, that had a communication with the atmosphere.

The ingenious Mr. Brodie, in recording some highly interesting experiments in regard to the suspension of the active principle, instances the case of a frog which lived and crawled a full hour after its heart had been taken out. A leech, says Mr. B., which was immersed in a cold mixture, was instantly frozen into a hard solid substance; at the end of a few minutes, the animal was gradually thawed; the leech revived, and continued to live thirty-six hours after the experiment.

When the breast of a frog is opened, and its heart and intestines taken out, it will leap as if it had sustained no injury; while land-tortoises, and the whole tribe of lizards, will continue to live when deprived of their head. A living toad was once found in the heart of a cedar at West Chester, in America, about half grown. The cavity was just large enough for it. The tree was solid, of thirty years' growth, and there was no communication for the circulation of air. In 1806 two toads were locked up in a box at a village near Wakefield, taken out in 1807, when they were found alive and healthy after living two years without air or food.

The amphibia, though they are occasionally found in great numbers together, cannot be said to congregate, since they do nothing in common, and, in fact, do not live in a state of society.

*Of the Serpents.*—There is much geometrical elegance in the sinuous motions of the serpent tribe. Their back-bone consists of moveable articulations, and runs through the whole length of their body. The breast and abdomen are surrounded with ribs. Some of the species can render their bodies perfectly stiff, and by this means they are enabled to spring with great force and velocity on their prey. Most of them are covered with scales; and Linnæus has endeavoured to mark the different species by the number of scaly plates on the abdomen and beneath the tail. The head is connected to the trunk without the intervention of a neck; and their jaws are so formed that the animals are able to swallow bodies as thick, and



frequently even thicker, than themselves. The tongue is slender and cleft.

The poisonous serpents, which are *not more than one-sixth* of the whole number of species, differ from the others in having long tubular fangs on each side of the head, calculated to convey the venom from a bag or receptacle at the base of these fangs into the wound made by their bite. The venomous serpents have only two rows of true or proper teeth, (that is, such as are not fangs,) in the upper jaw, whilst all others have four.

The amphibia are divided by Linnæus into two orders; viz. *Reptiles and Serpents*.

The *Reptiles* are furnished with legs. They have flat and naked ears, without auricles. The principal tribes are, tortoises, lizards, and frogs.

*Serpents* are destitute of feet. Their jaws are dilatable, and not articulated; and they have neither fins nor ears.

It is a remarkable fact, that, among fossil remains, amphibia are the only animals found in the most ancient strata, and in these they exist in surprising numbers, and in varieties no longer living. It might be inferred from these facts, that amphibia either existed previously to all other animals, or at least that they were the only animals which inhabited the countries, of which the strata where they are found are the remains. If, therefore, they were not the primary animals, they seem to have been the aborigines of all countries. Indeed, their habits qualify them to occupy unformed or half-formed land, their natural sites being marshes, bogs, underwood, grass, &c. the undisturbed accumulations of which would be highly favourable to their increase; and in the event of their habitations being submerged by the sea, and converted into more solid strata by the incumbence of new strata, washed over the old ones, their remains would necessarily be found, while their involvement would lead to the phenomena of toads, lizards, &c. in ancient formations.

The most wonderful circumstance in regard to these facts, is the prolonged life of these animals. Their cells must contain the entire economy of a world, and

the animal must have subsisted by re-appropriating and re-consuming its own evaporations; for, being deprived of the power of motion, and thereby dispersing its energies, those energies would be dispersed and re-appropriated within its hermetically-sealed habitation. It may be compared to a man shut up with a certain quantity of money in his pocket, with no power of spending any; and we should not wonder, if, at the end of fifty years, he was found with as much money in his pocket, as when first shut up. That these animals merely exist, and do not flourish in such situations, is evident from their speedy death on being called into action.

#### THE TORTOISE TRIBE.

The animals of this tribe have an advantage over most others, even from their first seeing the light, in a solid and durable house, which is at the same time capable of resisting very powerful enemies, and yet is not fixed to one spot. The shell consists of two plates, joined together at the sides; the upper one being convex, into which the ribs and back-bone are ossified; and the other containing the breast-bones, or sternum. At each end of the two united shells, there is a hole: one for the head, neck, and fore-feet, to pass through; and the other, at the opposite end, for the hinder feet and the tail.

The legs are short; but one of the larger species has been known to carry five men on his back, with the greatest apparent ease. They are very tenacious of life; and, if their head be cut off, and their chest be opened, they will continue to live for several days.

The marine tortoises, or turtles, are distinguished from those on land, by their large and long fin-shaped feet, in which are enclosed the bones of the toes. Of these animals, there are, in the whole, about thirty-six species: four marine, eighteen inhabiting the fresh waters, and the rest residing on land.

Mr. White, of Selbourne, noticed the manners of a tortoise, that, for upwards of thirty years, was in the possession of one individual. It regularly retired underground about the middle of November, whence it did not emerge until about the middle of April. Its appetite was always most voracious in the height of summer, eating very little either in the spring or autumn. Milky plants, such as lettuces, dandelions, and sowthistles, were its



principal food. In scraping the ground to form its winter retreat, it used its fore-feet, and threw up the earth with its hinder ones over its back; but the motion of its legs was so slow, as scarcely to exceed the hour-hand of a clock. It worked with the utmost assiduity, both night and day, in scooping out the earth, and forcing its great body into the cavity; notwithstanding which, the operation occupied more than a fortnight before it was completed. It readily distinguished those persons from whom it was accustomed to receive attention. Whenever its owner came in sight, who had waited on it for more than thirty years, it always approached her, whilst to strangers it was altogether inattentive.

*The Great Mediterranean Turtle* is the largest, being from five to eight feet long, and from 600 to 900lbs. weight. But it is unfit for food, and sometimes poisons those who eat it. The shell, a tough, strong integument, resembling a hide, is useless.

In 1792, one was taken in the Loire, in nets not designed for such a capture. This turtle was of enormous strength, but by its own struggles, it entangled itself in the nets. Yet, when thus shackled, it appeared terrible to the fishermen, who at first, were for flying; but, finding it impotent, they dragged it on shore, while it loudly bellowed, and was heard at some distance.

This animal was then unknown upon the coasts of France; and was supposed to have been brought into those European seas, in some India ship, wrecked upon her return. Since that, however, others have been taken; particularly two, in Cornwall, in 1756, the largest of which weighed 800lbs.; and, two years before, one upon the Isle of Rhea, that weighed nearly as much.

*The Green Turtle*, so named from the green colour of its fat, has long been esteemed an article of luxury. It abounds in the West Indies, so that sloops are employed at Port Royal, in Jamaica, solely to catch them; and the markets are supplied with turtles, as ours are with beef. Its length is sometimes six feet, and weight, five or six hundred pounds. It is found also, in great quantities, on the coasts of most other islands and continents, near the equator. These parts produce numerous sea plants, which, though under the water, may be readily seen in calm weather; amidst these sub-marine pastures, numbers of green turtle are often seen, quietly feeding.

The author saw one taken in Mau-of-War Bay, Tobago, in April, 1802, so very large that the negroes were panic-struck at the capture; it furnished near 500 eggs, which were eaten by the negroes and sailors, and the weight afterwards was above 300lbs.

He paid the sailors and the negroes two bottles of rum for the shell, but lost it at home by a tidewaiter's cupidity.

One was caught at Port-Royal, in the Bay of Campeachey, near six feet wide, and four feet thick. A son of Captain Rock, about ten years old, went in the shell, as in a boat, from the shore to his father's ship, lying about a quarter of a mile distant.

Green Turtles are sometimes driven on the European shores, by stress of weather. In 1752, one six feet long and four abroad, weighing 800lbs. was caught after a storm in the harbour of Dieppe. In 1754, one, upwards of eight feet long, was caught near Antioche, and carried to the abbey of Long-veau, in Brittany: and a few years ago, a smaller one was caught among the submarine rocks, near Christchurch, Hants.

#### THE COMMON OR GREEK TORTOISE.

This species resides principally in burrows in the ground, wherein it sleeps most of its time, appearing abroad only for a few hours in the middle of each day. It feeds on various kinds of herbs, fruit, worms, snails, and insects. In autumn, it retires to some hiding place in the earth, where it remains torpid during the winter, not appearing abroad until revived by the warmth of the spring.

It seldom exceeds eight inches in length, and three pounds in weight. Its shell consists of thirteen middle pieces, and twenty-five marginal ones. The legs are short, and the feet covered with strong scales, and armed with four strong claws. The tail is rather shorter than the legs, and covered with small sales, which end with a hard pointed tip.

The Greek Tortoise, in a domesticated state, often arrives at a great age, even beyond a century. One was brought into the archbishop's palace at Lambeth, about 1633, and died in 1753, and then from neglect, rather than from old age. In 1765, a tortoise was living in a garden at Sandwich, in Kent, known to have been there eighty-six years. This animal, about thirty years before it died, received considerable injury; the wheel of a loaded waggon went over it and cracked its shell.

*The Gallipagos Tortoise*, which frequents the South Seas, is thus described by Captain Porter, in the *Journal of Modern Voyages and Travels*:—"Part of our crew staid at James's Island, and supplied themselves abundantly with those extraordinary animals, the tortoises of Gallipagos, which properly deserve the name of the elephant tortoise. Many of these animals weigh upwards of three hundred-weight. Their motion closely resembles that of the elephant; their steps slow, regular, and heavy; they carry their body about a foot from the ground; their neck is



from eighteen inches to two feet in length, and very slender; their head is proportionate to it, and strongly resembles that of a serpent. But what seems most extraordinary in this animal, is the length of time it can exist without food; for I have been well assured, that they have been piled away among casks in the hold of a ship, where they have been kept eighteen months, and when killed at the expiration of that time, were found to have suffered no diminution in fatness. They carry with them a constant supply of water in a bag at the root of the neck, which contains about two gallons; and, on tasting that found in those we killed on-board, it proved perfectly fresh and sweet. They are very restless when exposed to the light and heat of the sun, but will lie in the dark from one year's end to the other without moving. In the day-time they appear remarkably quick-sighted and timid, drawing their head into their shell on the slightest motion of any object; but they are entirely destitute of hearing, as the loudest noise, even the firing of a gun, does not seem to alarm them, and at night, or in the dark, they appear perfectly blind.

*The accompanying Plate exhibits several of the most curious species of the Tortoise tribe.*

#### THE FROG TRIBE.

The animals which compose this tribe are very generally dispersed over the globe. They feed on insects and worms, and reside principally in dark and unfrequented places, from which they crawl forth only in the night. All the species are oviparous, and the eggs are perfectly gelatinous. From the egg proceeds a Tadpole without feet, but furnished with a tail to aid its motions in the water: this drops off as the legs become protruded. In this imperfect state the animals have also a sort of gills or subsidiary lungs; and several of them have a small tube on the lower lip, by means of which they can fix themselves to solid bodies.

The number of species hitherto described is about *fifty*. They are divided into three sections, namely:

1. *Frogs*, which have smooth bodies, longish legs, and discharge their eggs in a mass. These leap with

great agility; and their hind-legs are, in general, equal in length to the head and body.

2. *Hylæ*, or *Tree Frogs*, which have their hinder legs very long, and the toes unconnected. These are generally smaller than frogs, and more elegant in all their proportions. They are very nimble, leap with great force, and are able to pursue insects with great agility, even on the branches and leaves of trees.

3. *Toads*, which have their body puffed up and covered with warts. These have short legs, and can scarcely be said to leap. They avoid the light, and seldom leave their retreats in search of prey except during the night. These animals discharge their eggs in a long necklace-like string.

#### THE COMMON FROG.

In France, this frog is called *La Muette*, or the Silent Frog, from the circumstance of its voice being much less frequently heard, and being neither so loud nor so harsh, as that of the Edible Frog, the ensuing species.

The spawn of this frog, which is generally cast in the month of March, consists of a clustered mass of gelatinous, transparent, and spherical eggs, from six hundred to a thousand in number, in the middle of each of which is contained the embryo or tadpole in the form of a black globule. This sinks to the bottom of the water. During some hours it suffers no perceptible change; but when the eggs begin to enlarge, in consequence of becoming proportionally lighter, it rises to the surface. Roesel, the German naturalist, informs us, that at the end of eight hours the gelatinous part of the eggs grows thicker; and that the eggs themselves, as they increase in size, take somewhat of a spherical form. On the twenty-first day, the egg, if carefully examined, will be found to have opened a little on one side, where the tail of the tadpole makes its appearance; and this afterwards becomes more and more distinct every day. About the thirty-ninth day the little animals begin to have motion. Shortly after this, they tear asunder the membrane that immediately surrounds them, and float in the glairy fluid which connects the eggs together. The tadpole at first quits this glairy matter only occasionally, as if to try its strength, and it soon afterwards returns, apparently for the double purpose of retreat and nourishment.

About the end of July, they quit the water, and soon afterwards emigrate into the woods and meadows. The commencement of their journey is always in the evening. They travel all night, and conceal themselves during the day under stones, or in other



recesses: and resume their journey only when the night begins. In the day-time, however, whenever it happens to rain, they come out of their retreats, as if to solace and refresh themselves in the falling moisture. Hence originated a superstition common among the lower classes of people throughout Europe.

These immense multitudes of frogs, thus often suddenly emerging, and afterwards as suddenly disappearing, have greatly puzzled the vulgar, who could not explain so wonderful a phenomenon, but by the strange conjecture, that they descended in showers from the clouds, or that they were suddenly engendered by the mixture of drops of rain with the dust; and that, as soon as the sun regained his influence, they were all immediately annihilated. Mr. Ray informs us that, as he was riding one afternoon in Berkshire, he was much surprized at seeing an immense multitude of frogs crossing the road. On further examination, he found two or three acres of ground nearly covered with them; they were all proceeding in the same direction, towards some woods and ditches that were before them. He traced them back to the side of a very large pond, which, in the spawning-time, he was informed, always so much abounded with frogs, that their croaking was frequently heard at a great distance.

Frogs are numerous throughout Europe; and in the parts of America about Hudson's Bay, as far north as the sixty-first degree of latitude. Mr. Hearne says, he has frequently seen them dug up with the moss, frozen as hard as ice. In this state, their legs may be as easily broken off as the stem of a tobacco-pipe, and without communicating to them the least sensation; but, by wrapping them up in warm skins, and exposing them to a slow fire, they soon come to life, and the mutilated animals gain their usual activity. If, however, they be permitted to freeze again, they are past all recovery.

The mode of respiration with these animals is exceedingly curious. The organs adapted to this use are placed in the mouth. Behind the root of the tongue is the slit-like opening of the trachea; and, at the front of the upper part of the head are two nostrils, through which only the animal draws the air. The jaws during this action are kept closely locked; for, if the mouth be open, the animal cannot respire. The mouth forms a sort of bellows, of which the nostrils are the air-holes, and the muscles of the jaws, by their contraction and dilatation, make

the draught. By the twirl of the nostril the air is let into the mouth, when a dilatation of the bag takes place: it is then emptied from the mouth, through the slit behind the tongue, into the lungs, when there is a slight motion in the sides of the animal, and the muscles of the abdomen again expel it; and soon afterwards a second twirl in the nostrils takes place, and the like motions follow.

*The Edible Frog* is considerably larger than the common species, and is principally found in Italy, France, and Germany. The ova or spawn is not often deposited before the month of June. The globules are much smaller than those of the common frogs; and the young animals (which undergo precisely the same changes as the young of that species) are considerably longer in attaining their complete state. They arrive at their full growth in about four years, and live to the age of sixteen or seventeen.

This species lives chiefly in the water, whence, however, they often come out, both in search of food, and to bask in the sun. They become torpid at the commencement of winter; and this torpor generally takes place in some concealed retreat beneath the water, either in marshes, ponds, or lakes.

These creatures are brought from the country, in numbers of thirty or forty thousand at a time, to Vienna, and sold to the dealers, who have conservatories of large holes, four or five feet deep, dug in the ground, the mouth being covered with a board, and in severe weather with straw. In these conservatories, the frogs never become quite torpid. When taken out and placed on their backs, they soon turn themselves, and get together in heaps, one upon another, thereby preventing the evaporation of their humidity.

These frogs, during their breeding season, make a noise so loud, that, in the night, it may be heard to a very considerable distance. This cry begins in the early part of the spring, as soon as the fine weather sets in. Like the rest of their tribe, they are said always to be most vociferous before rain, and thereby to foretel the approach of damp or rainy weather.

*The Bull Frog* resides in the interior parts of America, where, at the springs, they are said to sit in pairs. In Virginia they are very abundant.



Their croaking resembles the hoarse lowing of a bull; and when, in a calm night, many of these animals are making a noise together, they may be heard to the distance of a mile and a half.

When alarmed, these animals leap to a most surprising distance at each exertion. A full-grown bull-frog will sometimes leap three yards.

*The Green Tree Frog* resides principally among the upper branches of trees, where it wanders among the foliage in quest of insects. These it catches with great dexterity, stealing towards them, till at a proper distance, when it makes a sudden spring of frequently more than two feet in height. During summer it inhabits woods, but about the end of autumn it retires to the waters, and lies concealed in a torpid state, in the mud, or under banks, till the spring. At the return of warm weather, it emerges.

Dr. Townson kept some tree-frogs in a window, and appropriated to their use a bowl of water, in which they lived. They soon grew quite tame. In the hot weather, whenever they descended to the floor, they became lank and emaciated. In the evening they seldom failed to go into the water, unless the weather was cold and damp; in which case they would sometimes remain out two days. A tree-frog that had not been in water during the night was weighed, and then immersed: after it had remained about half an hour in the bowl, it came out, and was found to have absorbed nearly half its own weight of water. From other experiments on tree-frogs, it was discovered that they frequently absorbed, by the under-surface only of their body, nearly their whole weight of water.

A surgeon in Germany kept a tree-frog in a glass vessel for nearly eight years. In winter it probably did not eat at all, as only a few insects, with grass and moistened hay, were put to it. During this season it was lean and emaciated; but in summer, when its favourite food could be procured in plenty, it soon again became fat.

Frogs and toads will frequently suffer their natural food to remain before them untouched, yet, if it make the smallest motion, they instantly seize it. Dr. Townson placed before a tree-frog dead flies. She took no notice of them; but the moment he moved them with his breath, she sprung upon and ate them. When flies were scarce, the doctor cut some flesh of a tortoise into small pieces, and moved these by the same means. She seized them, but the instant afterwards rejected them from her tongue. After he had obtained her confidence, she ate, from his fingers, dead as well as living flies. Frogs will leap at a moving shadow of any small object; and both frogs and toads will soon become sufficiently familiar to sit on the hand, and be carried from one side of a room to the other, in order to catch flies as they settle on the wall. At Göttingen, Dr. Townson made them his guards for keeping these trou-

blesome creatures from his dessert of fruit, and they acquitted themselves to his satisfaction. He has even seen the small tree-frogs eat humble-bees, but this was never done without some contest. The frogs were in general obliged to reject them, being incommoded by their stings and hairy roughness; but, in each attempt, the bee was further covered with viscid matter from the frog's tongue, and, when sufficiently coated with this, it was easily swallowed.

Captain Stedman, in sailing up a river of Surinam, observed, in the top of a mangrove tree, a battle between a snake and a tree-frog. When the captain first perceived these animals, the head and shoulders of the frog were in the jaws of the snake. This creature had its tail twisted round a tough limb of a mangrove tree; whilst the frog, which appeared about the size of a man's fist, had laid hold of a twig with his hind feet. In this position they were contending, the one for life, the other for his food, forming one straight line between the two branches; and thus they continued for some time, apparently stationary, and without a struggle. The jaws of the snake gradually relaxing, and by their elasticity forming an incredible orifice, the body and fore-legs of the frog gradually disappeared.

*In the Engraving is represented eleven of the most remarkable species of Foreign and British Frogs and Toads.*

#### THE COMMON TOAD.

The female toads deposit their spawn early in the spring, in the form of necklace-like chains or springs of gluten, three or four feet in length, inclosing the ova in a double series throughout. They become complete towards the beginning of autumn, about which time the young animals are frequently seen in immense multitudes. When they have undergone all the variations of their tadpole state, they forsake the water, and are often seen, in a moist summer's evening, crawling up, by myriads, from fenny places into situations somewhat more dry.

When irritated, the toad emits from various parts of its skin a kind of frothy fluid, which, in our climate, merely produces slight inflammation, from its weakly acrimonious nature. Dogs, on seizing these animals, appear to be affected with a slight swelling in their mouth, accompanied by an increased evacuation of saliva. The limpid fluid which the toad suddenly ejects from his body, when disturbed, has been ascertained to be perfectly free from any noxious qualities. It is its extremely-forbidding aspect only that has ob-



tained for the toad its present unjust character of being a dangerously poisonous animal :

Toad that under the cold stone  
Days and nights has thirty-one,  
Swelter'd venom, sleeping got,  
Boil thou first i' th' charmed pot.

It is persecuted wherever it appears, on the supposition merely, that because it is ugly, it must consequently be venomous. Its eyes are, however, proverbially beautiful, and form a striking contrast with the remainder of its body :

Some say the lark and loathed toad change eyes.

SHAKSPEARE.

Carthagena, and Porto Bello, in America, toads are so extremely numerous, that, in rainy weather, not only all the marshy ground, but the gardens, courts, and streets, are almost covered with them. In these countries the toad is of great size, the smallest of them measuring at least six inches in length. If it rains during the night, all the toads quit their hiding places, and then crawl about in such inconceivable numbers, as almost literally to touch each other, and to hide the surface of the earth : on such occasions it is impossible to stir out of doors without trampling them under-foot at every step.

The spider was formerly considered an inveterate enemy to the toad ; and it has been said, that, whenever these animals met, a contest always took place, in which, from its superior dexterity and address, the former often proved victorious.

Mr. Pennant relates some curious particulars respecting a domestic toad, which continued in the same place for upwards of thirty-six years ! It frequented the steps before the hall-door of a gentleman's house in Devonshire. By being constantly fed, it was rendered so tame as always to come out of its hole in an evening when a candle was brought, and to look up, as if expecting to be carried into the house, where it was frequently fed with insects. After having been kept more than thirty-six years, it was at length destroyed by a tame raven.

*The Pipa, or Surinam Toad*, is at first view an extremely hideous and deformed animal. It is considerably larger than our toad, has a flattish body, and a somewhat triangular head. The mouth is very wide, and furnished at the edges or corners with a kind of cutaneous appendage. The fore-feet have four long and thin toes, each divided at the tip into four distinct parts, which, when inspected with a magnifier, are found to be each again obscurely subdivided almost in a similar manner. The hind feet have five toes united by a web. The male and female



BRITISH AND FOREIGN FROGS AND TOADS.







are so different in appearance from each other, as frequently to be mistaken for different species.

This creature, in the production of its offspring, affords a very singular deviation from the usual course of nature. On the back of the female are formed certain cavities, opening outward, and somewhat resembling the cells of a bee-hive. They are of a circular form, about half an inch deep, and each nearly a quarter of an inch in diameter. They are at a little distance from each other, and somewhat irregularly ranged. At a certain period of incubation, if it may be so called, each of these cells is found to contain a little live toad, an exact miniature in all respects of its parent; but how it finds subsistence there, (for the creature has no adhesion to the parent, but may easily be taken out, as from a case, and again replaced without injury,) does not seem as yet to be ascertained.

In this singular production of its young, the pipa seems to bear considerable analogy to the different species of opossum. Ferman says, that the pipa is only calculated for having one breed. The number of young ones produced by a female that he observed was seventy-five; and they were all perfected in the space of five days after they first appeared.

#### THE LIZARD TRIBE.

The animals of this tribe, which have each four legs and a tail, are distinguishable at first sight from other oviparous quadrupeds. Their bodies are either covered with scales, of greater or less rigidity, or with a kind of warts or tubercles.

The lizards are principally inhabitants of the warmer regions of the globe. The larger ones live on animals, which they seize by stratagem, and the smaller ones on insects. The aquatic species undergo a metamorphosis, from a tadpole to a perfect state. Most of them are produced from eggs externally, but some are brought forth alive. In this tribe are found nearly the largest and the smallest animals in the creation.

Although in many of the species the colour and form are exceedingly beautiful, these animals, like the toad, have obtained the general character of being



poisonous. The whole tribe, however, (except one species, the spitting lizard, which, when irritated, discharges a black and acrid matter), is harmless.

#### THE CROCODILE.

If we except the elephant, the hippopotamus, and the whale, these are the largest animals that have yet been discovered. Some of them have been known to attain the length of twenty-five feet, and upwards; and, probably, like fishes, their bulk continues to increase during their whole life.

The armour with which the crocodile is clad, is so strong, as easily to repel a musket-ball. On the lower parts it is much thinner and more pliable than on the upper. The whole animal appears as if covered with the most regular and curious carved-work. The colour of the full-grown crocodile is blackish-brown above, and yellowish-white beneath. The upper parts of the legs and sides are varied with deep yellow, somewhat tinged with green. The mouth is of vast width, and furnished with numerous sharp-pointed teeth, thirty or more on each side of the jaws; and these are so disposed, as, when the mouth is closed, to fit alternately above and below.

Except when pressed by hunger, or urged by the necessity of depositing its eggs, this enormous creature seldom leaves the water. It usually floats upon the surface, and seizes its prey; but, when this method fails, it then goes closer to the bank, where it waits for some land-animal that may come to drink; the dog, the bull, the tiger, or man himself. Its retreat is seldom discovered till it is too late for safety. It seizes the victim with a spring; and, having secured the prey, it drags it into the water, instantly sinks with it to the bottom, and, in this manner, quickly drowns it. When the creature wounded by the crocodile makes its escape, the latter pursues and often takes it a second time.

The young of the crocodile are produced from eggs deposited in the sand, and hatched by the heat of the sun, near the bank of some river or lake. The general number of eggs is from eighty to a hundred. They are not larger than those of a goose, and are covered with a tough white skin. The female carefully fills up the hole before she leaves them. In each of the two succeeding days she lays as many more, which she hides in a similar manner. The eggs are hatched

generally in about thirty days. When the animals break the shell, they seldom exceed six or seven inches in length. On emerging into the air, they immediately run into the water, where multitudes of them are devoured by various kinds of fish, and even by the larger animals of their own species. Ichneumons and vultures abridge the enormous fecundity of the crocodiles, and in this capacity they destroy and devour millions of their eggs.

The rivers of Guinea are pestered with vast shoals of crocodiles; and, on hot days, great numbers of these animals lie basking on the banks; and, as soon as they observe any one approach, they plunge into the water. M. Adanson says, that in the river Senegal, on the western coast of Africa, he has sometimes seen more than two hundred of them swimming together, with their heads just above water, resembling a great number of trunks of trees floating down the river. In the neighbourhood of Thebes, in Egypt, M. Soncini's boat was often surrounded by crocodiles on a level with the surface; but they allowed the boat to pass with apparent indifference.

In the Rio San Domingo, on the western coast of Africa, M. Brié found the crocodiles (usually considered ferocious animals,) perfectly harmless; inso-much, that the children played with them, mounted on their backs, and even beat them, without danger, or any appearance of resentment.

The worship of crocodiles was indeed a folly among men of ancient date: Herodotus says, that "among some of the Egyptian tribes, the crocodiles are held sacred; but that, among others, they are regarded as enemies. The inhabitants in the environs of Thebes, and the Lake Moëris, are firmly persuaded of their sanctity; and both these tribes bring up and tame a crocodile, adorning his ears with rings of precious stones and gold, and putting ornamental chains about his fore-feet. They also regularly give him victuals, offer victims to him, and treat him in the most respectful manner while living; and, when dead, embalm, and bury him in a consecrated coffin."

#### THE ALLIGATOR, OR AMERICAN CROCODILE.

Alligators are often seen floating on the surface of the water like logs of wood, and are mistaken for such by various animals, which by this means they surprise, and draw underneath to devour at leisure. They are said to form a hole in the bank of a river, below the surface of the water, and there to wait, till the fish, that are fatigued by the strong current, come into the smooth water to rest themselves, when they immedi-



ately seize and devour them. But, as they often find difficulty in obtaining a regular supply of food, they are able to sustain a privation of it for a great length of time. When killed and opened, stones and other hard substances are generally found in their stomach. In many, pieces of wood have been found, which weighing seven or eight pounds each, which are supposed to have lain in the stomachs of the animals for several months. Dr. Brickell saw two alligators killed in North Carolina, which had in their bellies several sorts of snakes, and some pieces of wood; and in one of them was found a stone, that weighed about four pounds. Alligators will sometimes endeavour to get into the canoes or boats that pass their haunts during the night. The alligators which inhabit the lakes of South America, are sometimes left dry, in consequence of the water evaporating; in which case they subsist by catching birds or land animals, or even live a long time without food.

It was by an accidental occurrence, that these inhabitants of the New World obtained their appellation. Had the first navigators seen any object that more resembled their form than a lizard, they would probably have adopted the name by which the Indians call them, *Cayman*; but the Spanish sailors, remarking their great resemblance to the lizard, they called the first of them which they saw, *Lagarto*, or Lizard. When our countrymen arrived in America, and heard that name, they called the creature *a-Lagarto*, whence was afterwards derived the word *Alligato*, or Alligator.

Dr. Brickell saw an alligator in a large pond before a planter's house. It remained there nearly half a year, during which time it was regularly fed with the entrails of fowls and raw meat. It frequently came into the house, where it would remain for a short time, and then return again to its shelter in the pond.

Dampier says, that the alligators about the Bay of Campeachy are by no means so ferocious as they are in other places. He never knew them attack a man, but he has often seen them run away from his sailors. Dampier once stumbled over one of these animals, and fell down; he had no sooner recovered himself, than he stumbled over the animal a second, and afterwards a third time; but at last he got off in safety.

Mr. Forbes, in his Oriental Memoirs, says, there seems to be no essential difference between the alligator of India and the Egyptian crocodile, *lacerta alligator* and *lacertus crocodilus*. Natu-

ralists confine the alligator to South America, the crocodile to Asia and Africa ; but in India the *lacerta crocodilus*, generally called the alligator, is from five to twenty feet long, shaped like the genus to which he belongs: the back is covered with impenetrable scales; the legs short, with five spreading toes on the fore-feet, and four in a straight line on the hinder, armed with claws: the alligator moves slowly, its whole formation being calculated for strength, the back bone firmly jointed, and the tail a most formidable weapon; in the river he eagerly springs on the wretch unfortunately bathing within his reach, and either knocks him down with his tail, or opens for his destruction a wide mouth, armed with numerous sharp teeth of varied length; by which, like the shark, he sometimes severs the human body at a single bite. The annals of the Nile and Ganges, although wonderful, are not fabulous. The supposition that the upper jaw only of the alligator was moveable, is now completely disproved: the eyes are of a dull green, with a brilliant pupil, covered by a transparent pellicle, moveable as in birds: from the heads of those of large size, musk is frequently extracted. The alligator sometimes basks in the sun-beams on the banks of the river, but oftener floats on its surface; there concealing his head and feet, he appears like the rough trunk of a tree, in both shape and colour: by this deception, dogs and other animals fearlessly approach, and are suddenly plunged to the bottom by their insidious foe: even the royal tiger becomes his prey, quitting the cover to drink at the river; the wily alligator, concealed under water, steals along the bank, and, suddenly emerging, furiously attacks the tiger, who never declines the combat: the alligator generally loses his eyes, and receives dreadful wounds on the head, but at length plunges his adversary into an unnatural element, and there devours him.

The astonishing size and strength of the alligator and crocodile render them very terrible: the small ones live chiefly on fish; and, far from attacking the human species, dive instantly on their approach: the female sometimes lays three or four hundred eggs, which she covers with sand, to be vivified by the sun; in about a month the brood break the shell, and instinctively take to the water. Mr. Forbes kept a small one several months in a garden pool; but, growing large and destructive to poultry, he was set at liberty.

#### THE COMMON IGUANA

Grows to the length of four or five feet. The tail is long and round, the back serrated, and the crest denticulated. The individuals vary much in colour, but their prevailing tinge is brownish green. Under the chin they have a pouch capable of great inflation, and by which alone they are easily distinguished from other lizards.

The Iguana is found in many parts both of Africa and Asia, and is a very common animal in Surinam, in the woods of Guiana. It feeds on insects and vege-



tables, and is an extremely gentle and harmless animal. Its appearance, however, is alarming: its eyes appear like fire; it hisses like a serpent, swells out the pouch under its throat, erects the scales on its back, and raises its head, covered over with tubercles, in a menacing attitude.

In the spring, the male exhibits great attachment towards the female. He defends her even with fury, attacking, with undaunted courage, every animal that seems inclined to injure her; and at this time, though his bite is not poisonous, he fastens so firmly, that it is necessary either to kill him, or to beat him with great violence, to make him quit his hold.

In the Bahama Islands the iguana is sometimes ensnared by the following artifice, which has been described by Labat. "We were attended (he says) by a negro, who carried a long rod, at one end of which was fastened a whipcord, with a running knot. After beating the bushes for some time, the negro discovered the iguana basking in the sun, on the dry limb of a tree. He then began whistling, to which the iguana was wonderfully attentive, stretching out his neck, and turning his head, as if to enjoy it more fully. The negro now approached, still whistling: and, advancing his rod gently, tickled the sides and throat of the iguana, which seemed pleased with the operation. The negro perceiving this, dexterously slipped the noose over his head, and with a jerk brought him to the ground.

Dr. Browne had a full-grown iguana about his house more than two months: for some days it continued to indicate symptoms of great ferocity; but at last it grew so tame, that it would pass the greatest part of the day upon his bed or couch.

*There are several beautiful species of this tribe, for which see the accompanying Plate.*

#### THE NIMBLE LIZARD,

One of the British species, measures in length, from the tip of the nose to the end of the tail, about six inches and a half. The upper part of the head is light brown, and the back and tail are variously striped and spotted with light brown, black, white, and dark brown.

This elegant little animal is the most gentle and inoffensive of all the lizard tribe. It excites no sensations of terror; and, when taken into the hand, makes not the least attempt either to bite or offend. In some countries, children use it as a play-thing; and, in consequence of its natural gentleness of disposition, it becomes, in a great measure, tame and familiar.

The tail is nearly twice the length of the body, and tapers from the root to the extremity, where it ends in a sharp point. This, from the weakness of the vertebræ, is so brittle, as often to snap off on the least roughness in handling. In this case, however, it is sometimes reproduced. When the tail has been split or divided lengthways, each of the portions, in healing, has rounded itself, and thus the animal has had a double tail. One of these has contained the vertebræ, and the other only a kind of tendon in the centre.

In seizing its prey, it darts forth its forked tongue with astonishing velocity. Like most other oviparous quadrupeds, this lizard is capable of existing for a long time without food; and some of these animals have been kept in bottles, without nourishment, for upwards of six months.

Mr. Edwards once surprised a nimble lizard in the act of fighting with a small bird, as she sat on her nest in a vine against the wall, with newly-hatched young. He supposed that the lizard would have made a prey of the latter, could he but have driven the old bird from her nest. He watched the contest for some time; but, on his near approach, the lizard dropped to the ground, and the bird flew off.

#### THE GREEN LIZARD.

Its manners is as gentle as the nimble lizard; and, if taken young, may, to a certain degree, be tamed. On this account, and from its extremely beautiful appearance, it is in general a favourite animal. In Sweden and Kamtschatka, however, it is looked upon by the inhabitants with horror. Notwithstanding the generally peaceful disposition of the green lizards, they may easily be excited to fight, and they then bite each other with fury. They sometimes contend with serpents, but generally fall a victim to the unequal combat. When driven to extremity, the green lizard will defend itself even against the attacks of dogs, by springing at the muzzle of the assailant, and often



fixing itself so obstinately, that it will allow itself to be killed rather than quit its hold.

*The Green Lizard of Carolina* destroys immense numbers of flies, and other troublesome and noxious insects, about the houses of Carolina. They frequently remain motionless for half a day, waiting for their prey, and, when it appears, they spring at it with the swiftness of an arrow. They enter houses without fear, and, in pursuit of insects, they mount the tables whilst people are eating. They are so cleanly and so beautiful, that they are suffered to run over the tables, and even upon the plates, without exciting the smallest fear.

The skin of these lizards is so delicate as scarcely to conceal the internal changes to which they are subject; for they change colour, like the chameleon, according to the state of their health, or perhaps, more properly speaking, according to the temperature of the atmosphere. In a hot day they are usually of a green colour; but if, on the day following, the weather become chill, the same animals will often appear quite brown.

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## LECTURE LI.

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### AMPHIBIOUS ANIMALS, (*continued*).

#### THE CHAMELEON

Is a native of India, the Indian Islands, Africa, and some of the warmer parts of Spain and Portugal, as well as of several of the countries of South America. Its usual length is about ten inches; and that of the tail is nearly the same.

Fewer animals of the present class have attained greater celebrity than the Chameleon. From the earliest periods, this extraordinary reptile has been metaphorically employed to denote the most abject flattery. It has been considered as always deriving its colour from the object on which it was placed, and as having no colour of its own. In this creature, thus accommodating itself to present circumstances, mankind beheld a striking representation of the generality of courtiers.





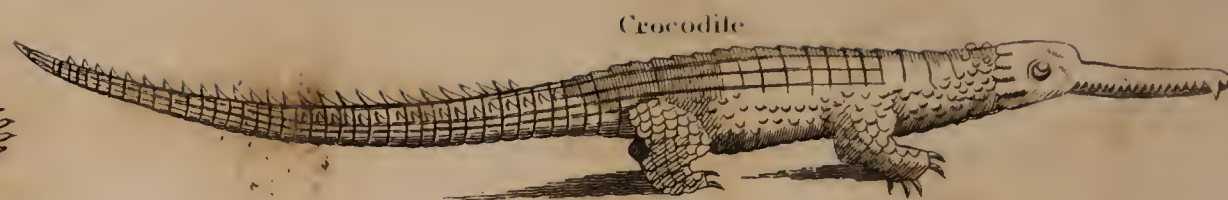
Dwarf Chameleon



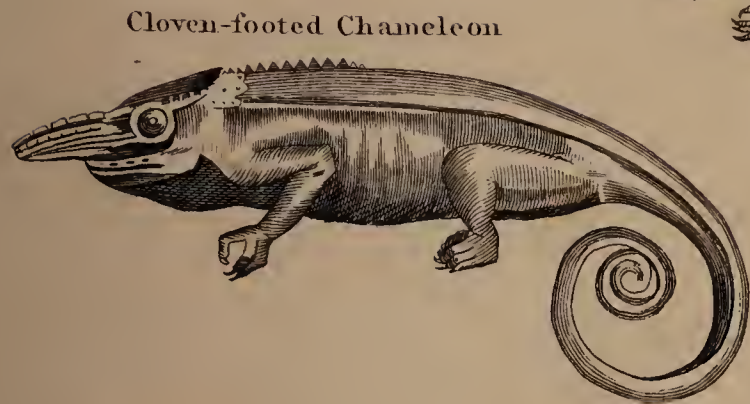
Common Chameleon



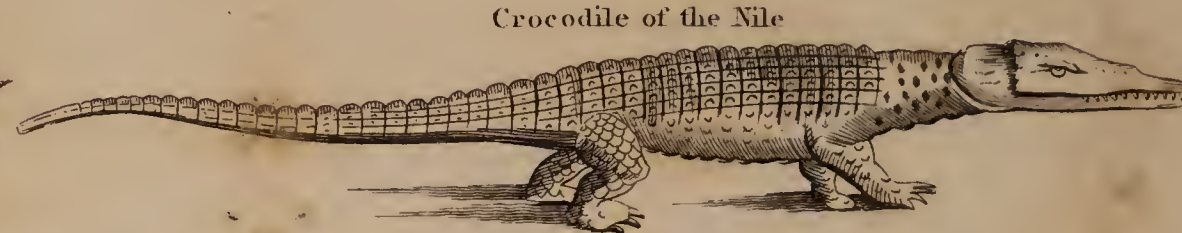
Green Lizard



Crocodile



Cloven-footed Chameleon



Crocodile of the Nile



Common Iguana



Red-throated Iguana



Flat-headed Gecko



Striped Gecko



Common Gecko



Striped Iguana

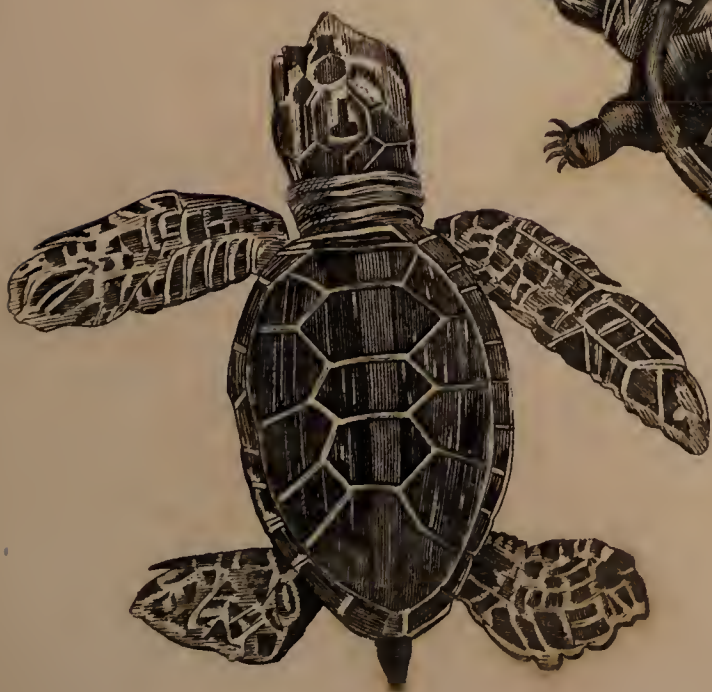


Iguana



Banded Gecko

Common Turtle



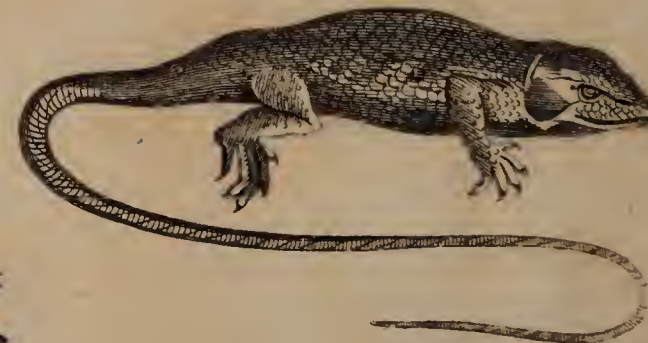
Mud Tortoise



Figured Tortoise



Marble Iguana



Yellow Tortoise



Rough Tortoise



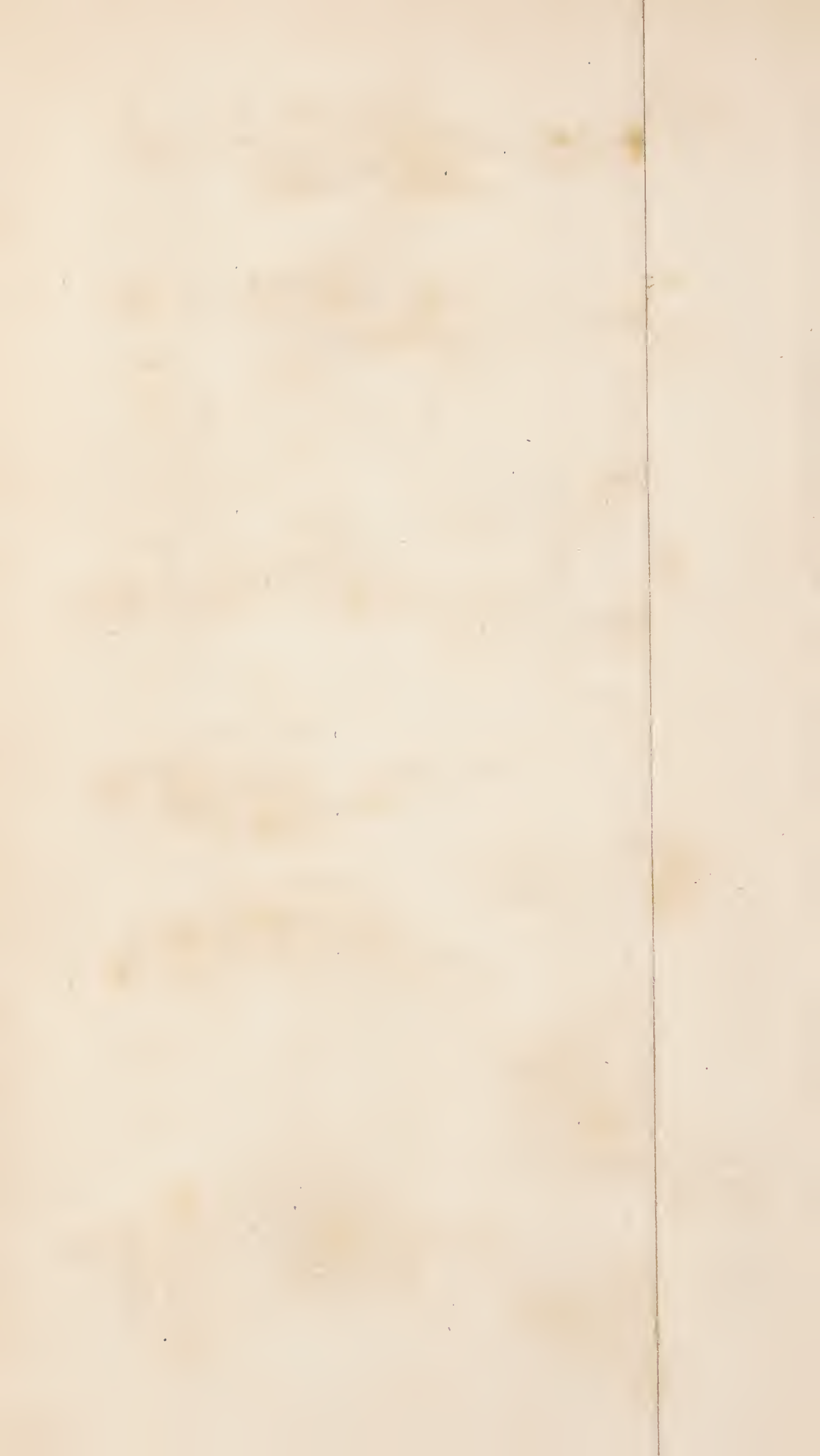
Spotted Lizard



Dark Lizard







The motions of this creature are extremely slow ; in travelling from one branch of a tree to another, and in taking food, it may rather be said to lie in ambush among the leaves, in order to catch such insects as may light upon, or come within the reach of, its long adhesive tongue, than to go in search of prey. The eyes of the chameleon are each covered by a rough membrane, in appearance not much unlike shagreen, which is attached to the eye-ball, and follows all its motions. This membrane is divided by a narrow, horizontal slit, through which the bright pupil, as if bordered with burnished gold, is seen. The eyes of the chameleon have another singular property, that of looking at the same instant in different directions. One of them may frequently be seen to move when the other is at rest ; or one will be directed forward, whilst the other is attending to some object behind ; or in a similar manner upward and downward.

The singular operation of the chameleon changing its colour is thus described :—

The colour of the chameleon, says M. D'Obsonville, is naturally green, but it is susceptible of many shades, and particularly of three very distinct ones ; Saxon green, deep green, and a shade bordering on blue and yellow green. When free, in health, and at ease, it is of a beautiful green, some parts excepted, where the skin, being thicker and more rough, produces gradations of brown, red, or light gray. When the animal is provoked, in open air, and well fed, it becomes blue green ; but when feeble, or deprived of free air, the prevailing tint is yellow-green. Under other circumstances, and especially at the approach of one of its own species, no matter of which sex, or when surrounded and teased by a number of insects thrown upon him, he then, almost in a moment, takes alternately the three different tints of green. If he be dying, particularly of hunger, the yellow is at first predominant ; but in the first stage of putrefaction this changes to the colour of dead leaves.

The causes of these changes, says Mr. Bingley, are various : and first, the blood of the chameleon is of a violet blue, which colour it will preserve for some minutes on linen or paper, especially on such as have been steeped in alum-water. In the second place, the different tunics of the vessels are yellow, as well in their trunks as in their ramifications. The epidermis, or exterior skin, when separated, is transparent, without any colour ; and the second skin is yellow, as are all the little vessels that touch it. Hence it is probable that the change of colour depends upon the mixtures of blue and yellow, from which result different shades of green. Thus, when the animal, healthy and well fed, is pro-



voked, its blood is carried in greater abundance from the heart towards the extremities; and, swelling the vessels that are spread over the skin, its blue colour subsides, and, with the yellow of the vessels, produces a blue green that is seen through the epidermis. When, on the contrary, the animal is impoverished and deprived of free air, the exterior vessels being more empty, their colour prevails, and the animal becomes of a yellow-green till it recovers its liberty, is well nourished, and without pain, when it regains its former colour; this being the consequence of an equilibrium in the liquids, and of a due proportion of them in the vessels.

When the chameleon is at rest, and in the shade for some time, the grains, or little eminences on the skin, are sometimes pale red, and the soles of the feet are white, slightly tinged with yellow; this colour changes, when exposed to the light of the sun: that part of the skin on which the rays of the sun fall, is frequently of a brownish grey, while the unilluminated part is of a beautiful fawn colour, produced by the mixture of a pale yellow, which the granular eminences assume, joined with a clear red, that then appears on the plain skin between the grains: this splendid colouring is usually distributed in blotches, between which the grains appear mixed with blue and greenish, and the flat skin is redish: at other times, the whole skin seems of a beautiful green, spotted with yellow. When touched, it often becomes suddenly spotted all over with pretty large blackish blotches, mixed with some green; but it is now thoroughly ascertained, that it by no means assumes the colours of the bodies which are around it; and that those which it accidentally presents are not extended over the whole of its body, as was formerly believed.

Gay, gives the following pleasing illustration of this curious animal in a fable, which is strongly characteristic of the *naïveté* of that elegant writer:—

Two travellers —————  
 Discours'd awhile, 'mongst other matter,  
 Of the chameleon's form and nature.  
 "A stranger animal," cries one,  
 "Sure never liv'd beneath the sun:  
 "A lizard's body, lean and long,  
 "A fish's head, and serpent's tongue.  
 "Its foot with triple claw disjoin'd,  
 "And what a length of tail behind!  
 "How slow its pace! and then its hue—  
 "Whoever saw so fine a blue?"

"Hold there," the other quick replies,  
 "'Tis green, I saw it with these eyes."  
 "I've seen it, sir, as well as you,  
 "And must again affirm it blue."  
 "'Tis green, 'tis green, sir, I assure ye."  
 "Green!" cries the other, in a fury ;  
 When luckily came by a third ;  
 To him the question they referr'd :  
 And begg'd he'd tell them, if he knew,  
 Whether the thing was green or blue.  
 "Well, then at once to ease the doubt,"  
 Replies the man, "I'll turn him out :  
 "And when before your eyes I've set him,  
 "If you don't find him black—I'll eat him."  
 He said ; and full before their sight  
 Produc'd the beast, and lo!—'twas white !

*For three beautiful species of this tribe, see the engraving.*

#### THE SALAMANDER

Is seven or eight inches in length, though sometimes it becomes much larger. It is easily distinguished from all other lizards by its short, cylindrical tail, and deep shining black colour, variegated with large oblong and somewhat irregular patches of bright orange-yellow. It is found in shady woods, in many parts of Germany, Italy, and France.

The generality of mankind have believed the absurd stories that have for ages been circulated of the salamander, not only being able to withstand the effects of this powerful element, but even to extinguish it. The ancients, pretending that it owed its existence to the purest of elements, called it the Daughter of Fire, giving to it, at the same time, a body of ice. The moderns adopted the absurd tales of the ancients ; and, some writers have asserted that the most violent fire could be extinguished by the salamander. In the most raging conflagration, it has been stated, that if one of these small lizards were but thrown into the flame, its progress would immediately be checked. In addition to this, the salamander was erroneously considered a poisonous reptile, and has been generally held in terror.

The salamander is extremely tenacious of life, and is not to be killed by blows or wounds without difficulty ; but if wetted with vinegar, or sprinkled with powdered salt, it soon dies in convulsions. It is able



to continue under water for a considerable length of time; and some have been kept in water for more than six months, without any other food than what they could collect from that element. The females are generally supposed to produce their young ones into the world alive, hatched from eggs within their own bodies, in the same manner as vipers. M. de Maupertuis, in one female that he opened, counted forty-two, and in another forty-four. When first hatched, the young salamanders are nearly black, and almost without any yellow spots. They are deposited in the water, and are furnished with a kind of fins on each side of the neck, which always drop off as soon as the animals become perfect.

#### THE FLYING DRAGON

Is a beautiful species of the lizard tribe, and was formerly believed by the ignorant to be a fierce animal with wings, and whose bite was mortal. This animal differs from the lizard tribe merely in its being furnished with a lateral expanding membrane, strengthened by a few radii or bony processes. These reptiles inhabit Asia, Africa, and America, where they are seen flying from tree to tree, and feeding on flies, ants, and other insects. They are said to make a noise with their wings, and they are able to support themselves in the air, during a flight of thirty paces. It is supposed that the remarkable gular pouch with which it is furnished, may be used for retaining for some time a number of small insects which it may collect, to be afterwards swallowed more at leisure. The animal is covered with very small scales, and is generally of an ash-colour, varied and clouded on the back and wings with brown and white.

The total length of this curious reptile is about a foot, the tail being extremely long in proportion to the body: the head is of a very singular form, being furnished beneath with a triple pouch, one of which hangs under the throat, while the other two project, one on each side. The colour on the upper parts is an elegant pale blue, the back and tail being marked by several dark bars, while the wings are spotted with brown, black, and white patches.

The inhabitants of Lapland, and several other countries, of the north of Europe, have many fabu-



FLYING DRAGON.

*Held & Son, 1823.*

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lous notions respecting this animal. They say, for instance, that although it usually lives in the water, yet it often bounds up from the surface of the water, and alights on the branch of some adjacent tree, where it makes a noise resembling that of a man laughing.—(See the engraving.)

The female deposits her eggs towards the end of May, or the beginning of June. These are very numerous, and are connected together in two strings, by a viscid substance, which likewise surrounds each single egg. They are deposited at the bottom of the water, but they sometimes rise for a little while to the surface, in consequence of some globules of air which form in the glairy matter that surrounds them: that air, however, soon escapes, and they again sink. The young efts may be distinctly perceived through this glairy matter, coiled up within a transparent membrane. These gradually increase in size, and soon begin to move, at first slowly, but afterwards with greater agility. After eight or ten days, according to the climate or season, they tear themselves a passage through the membrane. Almost all the animals of the lizard tribe, change their skins once or twice a year, but the efts do this much more frequently.

*The Monitor Lizard* is so called from a circumstance which seems of very doubtful authority. It is said that, on the sight of a crocodile, it sets up a loud and shrill cry, through fear, and thus frequently warns the traveller of the vicinity of that formidable creature. The general colour is black and white; the black forming the ground colour, and the white the variegations, which are disposed in transverse bands of annulated spots with black centres. It is found in the East Indies and in the southern parts of America.

*The Siren* is distinguished by the ambiguity of its characters, which induced Linnæus to institute for it a new order of Amphibia, under the title of Meantes. The siren has a close affinity to the lacerta or lizard, and is a native of North America. It is found principally in the province of South Carolina, in muddy and swampy places; it has a sort of squeaking or singing voice, for which reason, Linnæus named it siren. It is remarkable that this animal, when violently thrown on the ground, breaks into three or four pieces; in which particular it resembles some of the serpent tribe.

#### THE BASILISK

Of the ancients, supposed to be the most malignant



of all poisonous animals, and of which the very aspect was said to be fatal, is a fabulous existence to be found only in the representations of painters and poets :

But fiercely hissing thro' the poison'd air,  
The basilisk exerts his deathful glare :  
At distance bids each vulgar pest remain,  
And reigns sole monarch of his sultry plain.

The animal known in modern Natural History by this name is a species of lizard, of a very singular shape, and which is particularly distinguished by a long and broad wing-like process or expansion continued along the whole length of the back, and to a very considerable distance on the upper part of the tail, and furnished at certain distances with internal radii analogous to those in the fins of fishes, or still more so, those in the wings of the flying dragon. Notwithstanding its formidable appearance, the basilisk is perfectly harmless, and resides principally amongst trees, where it feeds upon insects. The colour is a pale cinereous brown, with some darker variegations towards the upper part of the body. It is about a foot and a half in length.

#### THE GECKO.

The Staurus and Stellio of the ancients, is a poisonous animal, with a round tail as long as the body; the toes have nails, and the ears are concave. It is tame, in summer frequenting houses, and sitting erect on its hind feet; but it disappears in winter; it squeaks like a weasel, and when harassed, will fly to man for refuge. From between the inferior lamellæ of its feet it exudes a poisonous juice on the bodies or meat over which it passes, productive of fatal cholics in those who eat such meat. The Japanese poison their arrows with this juice.

*In the accompanying plate we have introduced four beautiful species of this animal.*

## SERPENTS.

## THE RATTLE-SNAKE TRIBE.

In fair Calabria's woods a snake is bred,  
 With curling crest, and with advancing head,  
 Waving he rolls, and makes a shining track :  
 His belly spotted, burnish'd is his back :  
 While springs are gushing, while the southern air  
 And dropping heav'ns the moisten'd earth repair,  
 He lives on standing lakes or trembling bogs;  
 And fills his maw with fish, or with loquacious frogs.  
 But when, in muddy pools, the water sinks,  
 And the chapt earth is furrow'd o'er with chinks,  
 He leaves the fens and leaps upon the ground,  
 And, hissing, rolls his glaring eyes around.  
 With thirst inflam'd, impatient of the heats,  
 He ranges in the fields, and wide destruction threats.  
 O! let not sleep my closing eyes invade  
 In open plains, or in the secret shade,  
 When he, renew'd in all the speckled pride  
 Of pompons youth, has cast his slough aside,  
 And in his summer liv'ry rolls along,  
 Erect, and brandishing his forky tongue, }  
 Leaving his nest and his imperfect young;  
 And, thoughtless of his eggs, forgets to rear  
 The hopes of poison for the coming year.

DRYDEN.

THE animals of this tribe are furnished with poisonous fangs; but their bite is not fatal, unless they be much irritated. They are confined to the warmer parts of America, where they prey on the smaller species of birds, lizards, and insects. They intimate their approach by the rattle at the extremity of their tail: this rattle is composed of hollow, membranaceous articulations, that annually increase in number till they amount to about forty.

*The Banded Rattle Snake*, grows to the length of five or six feet, similar to that of the English Viper.

Its colour is yellowish brown above, marked with broad transverse black bars. Both the jaws are furnished with small, sharp teeth, and the upper has four large pointed fangs, which can be raised or compressed; at whose base is a round orifice, opening into a hollow, which runs the whole length like a small channel. When the animals bite, they force out of a bag, on which the roots of the teeth rest, the fatal juice, which is received into the round orifice of the teeth, and conveyed through the channel, into the wound. The tongue is frequently darted out and drawn back with great agility. Besides the fangs, there are other teeth, much smaller, in both jaws, for catching and retaining their prey. They have no grinders, as they do not chew their food, but always



swallow it whole. Their tail is composed of hollow, bony cells, jointed, and lying one within another, like a set of cups; annually increasing, till they amount to about forty. They are found in North and South America.

When the rattle-snake has been irritated, or the weather is exceedingly hot, its poison, on being inserted into a wound, often proves fatal very soon.

An American farmer once trod on a rattle-snake, that turned upon him, and bit his boot. At night, when he went to bed, he was attacked with sickness: he swelled, and, before medical assistance could be procured, he died. Soon afterwards, one of the sons put on his father's boots, and at night when he pulled them off, he was seized with the same symptoms, and died on the following morning. At the sale of the effects, the purchaser of the boots, on putting them on, experienced similar dreadful symptoms. By applying proper remedies, he, however, recovered. The fatal boots were now carefully examined, and the two fangs of the snake were discovered, left in the leather, with the poison-bladders adhering. They had penetrated entirely through, and both the father and the son had imperceptibly scratched themselves with their points in pulling off the boots.

Dr. Paley says, "the animal itself being regarded, this faculty is good; being conducive to the defence of the animal, or the subduing it; and probably to the killing it, when caught by a mortal wound inflicted in the passage to the stomach, no more merciful to the victim, than salutary to the devourer. The poisonous fang may do that which, in other animals, is done by the crush of the teeth."

The Abbe Fontana thinks the bite of the rattle-snake would not usually be mortal, except in certain particularly unfortunate cases, as puncture in some very tender part, principal nerve, or considerable lymphatic vessel. The most innoxious snake is as carefully avoided as the viper; and thus the powers of revenge possessed by a few, act as preservatives of the whole species.

The following instance shews that their poison, though very terrible, does not always cause death. A gentleman in Virginia, accidentally trod upon a rattle-snake, which was so enraged, that it bit him in the hand. The gentleman killed the snake, which he carried home, and, throwing it upon the ground, told his family that he was killed, and the snake was his murderer. In such an extremity, no time was to be lost, and olive oil, the nearest remedy at hand, was immediately applied. His arm, which was beginning to swell, was tied up near the shoulder, the wound was well rubbed with the oil, and, the progress of the infection being arrested, he recovered.

The Ichneumon of the Indians, and the Peccary of America, destroy great numbers of rattle-snakes,

by seizing them near the head, skinning them with great dexterity. The vulture and the eagle also prey upon them, often pouncing down from the clouds upon a long serpent, which they snatch up, struggling and writhing in the air.

Dogs, also, are bred up to oppose them. A traveller, in the woods of Martinique, was attacked by a large serpent, which he could not easily avoid, when his dog came to his relief, and seized the assailant, who entwined the dog, and pressed him so violently, that the blood came out of his mouth, yet he never ceased till he had torn it to pieces. During the fight, the dog was not sensible of his wounds, but soon after his head swelled, and he appeared to be as dead. His master, however, finding a banana tree near the spot, applied its juice, mixed with treacle, to the wounds, which recovered the dog, and quickly healed his sores.

The Indians sometimes succeed, in slight cases, by sucking the wound, which method, they consider as very successful; they carry a small root, a portion of which they chew, and having swallowed some of the juice, apply the rest to the wound.

When these animals are not provoked, they are perfectly inoffensive to mankind; being so much alarmed at the sight of men, as always, if possible, to avoid them, and never themselves commence an attack. Though the poison, therefore, be terrible, when it has entered the blood, it is given for the animal's own proper defence. Without this, serpents would be the most exposed and defenceless of all animals. Though not above a tenth of their number are actually venomous, yet the similitude all bear to each other excites a detestation of the whole tribe.

Rattle-snakes are viviparous, producing their offspring, about twelve in number, in June, which acquire the length of twelve inches by September. They adopt the same mode of preserving their young ones from danger, as the European viper,—receiving them into their mouth, and swallowing them.

Beauvois saw a large rattle-snake, which immediately coiled itself up, opened its jaws, and, in an instant, five small ones lying by it, rushed into its mouth. He retired to watch the snake, and in a quarter of an hour saw her again discharge them. He then approached a second time, when the young ones rushed into its mouth more quickly than before, and the animal immediately escaped.

The rattle-snake devours several of the smaller animals, and is said to be endowed with the power of fascinating its prey, until they even run into its jaws.



M. Le Vaillant saw, on the branch of a tree, a species of shrike trembling as if in convulsions; and, at the distance of nearly four feet, on another branch, a large species of snake, with outstretched neck, and fiery eyes, gazing steadily at the poor animal. The agony of the bird was so great, that it was deprived of the power of moving away; and, when one of the party killed the snake, it was found dead upon the spot, and that entirely from fear,—for, on examination, it appeared not to have received the slightest wound.

“Favoured inhabitants of our temperate regions! (says Buffon,) how happy are we in being placed at a distance from those countries, where heat and moisture exert so powerful an influence. Here we have no dreadful serpent to infect, with its venom, the water in which it swims with facility—the trees whose boughs it glides over with agility—the earth whose caverns it fills—and the solitary woods, where it exercises the same cruel sway as the tiger in the burning deserts. Let us not regret the natural beauties of their warmer climates, their more shady and majestic trees, their more verdant foliage, their more beautiful flowers, which yield a richer perfume: These flowers and trees with all their gay foliage, often conceal the rattle-snake beneath their deceitful beauties.”

#### THE BOA TRIBE.

This noble tribe of animals is the largest and strongest of the serpent race. They are destitute of venom, never attack but from necessity, always engage with open courage, and conquer only by superior strength. Three of the species are found in Asia; the rest are confined to the warmer parts of the New Continent.

*The Great Boa* is frequently from thirty to forty feet long, and of a proportionate thickness. The body is long, slender, and capable of bending in every direction; the number of joints, in the back bone, being very numerous. They give the backbone surprising pliancy; which is increased, by the manner in which each is locked into the other.

In man and quadrupeds, the flat surfaces of the bones lie one against the other, bound tight by sinews; but, in serpents, the bones play one within the other, like a ball and socket, so that they have full motion upon each other in every direction. If a man formed a machine composed of so many joints as are found in the back of a serpent, he would find it no easy task to give it such strength and pliancy at the same time.

There is much geometrical accuracy in the disposal of the serpent's scales, in assisting the animal's sinuous motion. As the edges of the scales lie over each other, they catch in the ground, and thus promote and facilitate the animal's progressive motion. The erection of these scales is, a multitude of distinct muscles, one end of which is joined to the middle of the foregoing.

A soldier and an Indian, being employed in pursuit of game, the Indian sat down upon what he supposed to be the fallen trunk of a tree; but the animal beginning to move, the poor fellow perceived what he had thus approached, and dropped down in an agony. The soldier, who was at some distance, now levelled his piece at the serpent's head, and shot it; and, going to the relief of his companion, found that he also was dead from his fright. On measuring the animal, it was found to be thirty-six feet long.

The Boa is found in America, the larger Indian Islands, and the deserts of Africa. It is the most vigilant of all serpents; for the whole tribe sleep with their eyes open, and are, consequently, always upon the watch, so that, till their rapacity is satisfied, few other animals will venture to approach their station.

In Java, one of these serpents has been known to kill and devour a buffalo. In a letter, printed in the German Ephemerides, is an account, by a spectator, of a combat between an enormous serpent and a buffalo. The serpent had, for some time, been waiting, near the brink of a pool, expecting its prey, and a buffalo was the first animal that appeared. Having darted upon the affrighted beast, it began to wrap him round with its voluminous twisting; and, at every fold, the bones of the buffalo were heard to crack with a loud report: at length all its bones were crushed to pieces, and the whole body was reduced to a mass; the serpent then untwined its folds, to swallow its prey at leisure; to make it slip down the throat the more smoothly, the boa licked the whole body, and thus covered it with a mucilaginous substance. It then began to swallow the end that



afforded the least resistance ; and its throat suffered so great a dilatation, that it took in, at once, a substance thrice its own thickness.

It was probably an enormous specimen of the boa, that once spread so violent a terror amongst the Roman soldiers, and threw the whole army into confusion. The circumstances are related by an historian :—

“Regulus, every where victorious, led his army into the country, watered by the river Bagra-da, near which an unlooked-for misfortune awaited them, and caused the Romans considerable loss. A serpent of prodigious size attacked the soldiers sent for water, and, while they were unable to offer any resistance, swallowed several in his enormous mouth, and killed others by twisting round them with his folds, and bruising them with the strokes of his tail. It caused so much trouble to Regulus, that he found it necessary to contest the possession of the river with it, by employing the whole force of his army ; during which, a considerable number of soldiers were lost, while the serpent could be neither vanquished nor wounded, the strong armour of its scales easily repelling the force of all the weapons brought against it. Recourse was had therefore to battering engines, with which the animal was attacked in the manner of a fortified city, and was thus at length overpowered. Several discharges were made without success, till, its back being broken by an immense stone, the formidable monster began to lose its powers, and was, though with difficulty, destroyed. The skin of the snake was taken off and sent to the city ; it is said to have measured one hundred and twenty feet, and remained for a long time hung up in one of the temples.”

The Bombay Courier of August 31, 1799, relates that one of the crew of a Malay prow went on shore, near the island of Celebes, in quest of betel-nut, and, on his return, lay down, as it is supposed, to sleep on the beach. In the course of the night, he was heard, by his comrades, to scream for assistance. They immediately went on shore, but it was too late, for an immense snake of this species had crushed him to death. The attention of the monster being entirely occupied by its prey, the crew went boldly up to it, cut off its head, and secured it with the body of the man. The snake seized the man by the right wrist, where the marks of the fangs were very distinct ; and the mangled corpse bore evident signs of having been crushed by the monster's twisting itself round the head, neck, breast, and thighs. The length of the snake was about thirty feet.

The boa has been imported into England alive. In 1821, one about nine-feet long was exhibited in London. It was fed on live rabbits, ducks, &c. which he instantly dispatched, by coiling his body two or three times round them, and crushing them to death ; after which, by strong and repeated gulps,

he gradually sucked the body of each in the whole, till it was completely swallowed.

The following most cruel experiment with one is authentic; though far from being in any way creditable to the humanity of the parties concerned:

In 1817, a boa was brought to Europe, in the vessel in which Lord Amherst returned from India. He was rather small, being only about sixteen feet long, and eighteen inches in circumference. He was shut up in a wooden cage, about four feet high, and five feet square, a space sufficiently large for him to coil himself round with ease; with bars close enough to prevent his escape; and with a sliding door, to admit the articles on which he was to subsist. At an early period of the voyage, the sliding door was opened, a goat was thrust in, for him to feed upon, and the door of the cage shut. The poor goat, instantly aware of the horrors of its perilous situation, immediately uttered the most piercing and distressing cries, butting with its head towards the serpent, in self-defence. The snake, which, at first, appeared scarcely to notice the poor animal, soon began to stir a little, and, turning his head in the direction of the goat, he fixed his eye on the victim, whose agony and terror seemed to increase. He first darted out his forked tongue, at the same time rearing a little with his head, suddenly seized the goat by the fore-leg, with his mouth, and, throwing it down, it was instantly encircled in his folds; and so quickly, that the eye could not follow the rapid motion of his long body, as he wound it round the animal. He still continued to grasp, with his fangs, though wholly unnecessary, the part he had first seized. The poor goat continued its cries, which soon became more and more feeble, and at last expired. The snake, however, long retained it in his grasp, after it was motionless. He then slowly and cautiously unfolded himself, and prepared to swallow it. Placing his mouth in front of the head of the dead animal, he commenced by covering it over with his saliva; and, then taking its muzzle into its mouth, he sucked it in, as far as the horns would allow. These opposed some little difficulty, less so from their extent than their points; however, they also very soon disappeared externally; yet their progress might be traced distinctly on the outside, threatening every moment to protrude through the skin. The whole operation of completely gorging the goat occupied about two hours and twenty minutes; at the end of which time, the tumefaction was confined to the middle part of the body, or stomach; the superior parts, which had been so much stretched having resumed their natural dimensions. He now coiled himself up again, and lay quietly in his usual torpid state, for about three weeks or a month, till, his last meal appearing completely digested and dissolved, he was ready for other food, which he devoured with equal facility. As the vessel approached the Cape of Good Hope, this animal began to droop, as it was then supposed, from the increasing coldness of the weather, which probably had its influence, and he refused to kill some fowls offered to him.



Between the Cape and St. Helena, he was found dead in his cage; and, on dissection, the coats of the stomach were discovered to be excoriated and perforated by worms. Nothing remained of the goat except one of the horns, every other part being dissolved.

Patient of hunger to a surprising degree, whenever it seizes and swallows its prey, the boa becomes like a surfeited glutton, unwieldy, stupid, helpless, and sleepy. It seeks a retreat, where it may lurk for days together, and digest its meal in safety. The smallest effort then will destroy it; for it can make little resistance; and, equally unqualified for flight or opposition, even the naked Indians do not fear to assail it. But, when this sleeping interval of digestion is over, it issues, with famished appetites, from its retreat, while every animal of the forest flies from its presence.

Dr. Russell, in his Treatise on Indian Serpents, relates the following account of a species of the boa tribe, called by the natives *bungarum pamah* and *sackenee*, in Bengal. The snake was sent from Mansoor Cottah, in 1788; it had been bruised a little, near the tail, and arrived in a languid state. Being set at liberty, it remained for some time motionless, but soon began to crawl slowly towards a dark corner. A chicken being presented to him, he seemed to take no notice of it, though the bird fluttered about him, and even rooted a claw on its head. The chicken was then put on the snake's back, on which he held so fast, that, when attempted to be separated, the snake was dragged a little way, without offering to resent the insult. After an hour had elapsed, the chicken was again presented; but, the snake showing no disposition to bite, his jaws were forced asunder, and the naked thigh of the chicken so placed, that the jaws closed upon part of it. The chicken, when disengaged, showed immediate symptoms of poison; was not able to stand; and, in twenty minutes, lay down on one side, and, convulsions supervening soon after, the bird expired within twenty-six minutes.

## SNAKES.

In all pride of summer's liveries deckt,  
With spot of azure, purple, green, and gold;  
Of huge extent sometimes, with brazen eyes,  
These, as a line, their long dimensions draw,  
Streaking the dusty ground with sinuous trace.

This tribe comprises a great number of species, (nearly two hundred,) which differ from each other very greatly both in size and habit. About one-fifth of the whole have been discovered to be poisonous. These are, in general, distinguishable from the rest by their large, flattish, and somewhat heart-shaped heads, and by having proportionally shorter bodies.

*The Common Viper, or Adder*, is found in most countries of the ancient world; in the East Indies it is also to be met with, with only a slight variation from the individuals of Europe; and it is even able to support the vicissitudes of very cold climates, being found in Sweden, where its bite is nearly as dangerous as in the warmer regions of Europe. It is likewise found in Russia, and in several parts of Siberia, where it is numerous, as the superstitions of the vulgar deter them from endeavouring to destroy this noxious reptile.

The apparatus of poison in the viper resembles that in the rattle snake, and the other poisonous serpents. Dr. Paley says, "The fang of a viper is a curious example of mechanical contrivance. It is a perforated tooth, loose at the root; in its quiet state, laid flat on the jaw; but furnished with a muscle which suddenly erects it. Beneath, close to its root, and communicating with the perforation, is a small bag, containing the venom; which, being pressed as the fang is raised, the venom is sent, with considerable impetus, through the perforation into the wound, while the tooth remains in it. What more effectual apparatus could be devised, for the double purpose of inflicting a wound, and injecting the poison?"

Dr. Mead says, the poison, when diluted with a little warm water, and applied to the tip of the tongue, is sharp and fiery, a sensation taking place, as though the tongue was struck through with something scalding or burning. Boerhaave asserts, that it produces



no ill effects; and the Abbé Fontana, that it cannot be swallowed with impunity.

It is said, that in the presence of the Grand Duke of Tuscany, while the philosophers were making elaborate dissertations on the danger of the poison taken inwardly, a viper-catcher requested that a quantity of it might be put into a vessel, and then, to the astonishment of the whole company, drank it off in their presence. Every one expected the man instantly to drop down dead; but they soon perceived their mistake, and found that, taken inwardly, the poison was as harmless as water.

The viper is the only one, either of the reptile or serpent tribes, in Great Britain, from whose bite we have any thing to fear. All the others are either entirely destitute of poison, or, if they possess any, it is not injurious to man. These animals are viviparous, and produce their offspring towards the close of summer.

The Rev. Mr. White, of Selborne, found a large female viper basking in the sun: he killed and opened her, and found in the abdomen fifteen young ones, about the size of full-grown earth-worms. This little fry issued into the world with the true viper spirit about them, showing great alertness as soon as they were disengaged from the body of the parent. They twisted and writhed about, set themselves up, and gaped very wide when touched with a stick; exhibiting manifest tokens of menace and defiance, though as yet no fangs were to be discovered, even by the help of glasses.

Young vipers, for some time after their birth, retreat, when suddenly alarmed, into the mouth of the female. They are capable of supporting long abstinence. A viper was kept more than six months in a box without food; during which time its vivacity was not lessened.

*The Aquatic Viper* is a native of India, frequenting wet, swampy fields, and commonly reckoned a water snake: its length is about two feet nine inches; circumference, three inches and a half.

One of these vipers was caught in the lake of Ankapilly, in one of the traps for eels; and by several experiments made with a stick to provoke it, it did not either hiss or snap; neither was it provoked to bite a chicken, though pecked several times by the animal. While it lay coiled up, a chicken, properly secured, was laid upon it; but it continued quiet, without attempting to wreath round the chicken, or in any way annoy it; and, when the bird fluttered and struggled to get loose, the snake, as if afraid, crept away. It should be remarked, however, that, in the course of this last experiment, the viper threw up a large fish, which appeared to have been but a short time in its stomach; so that its forbearance might, in some measure, be owing to satiety; a circumstance

that suggested caution against hasty decision. But it certainly is not venomous, and does not appear to be very irascible. It is regarded by the natives as harmless.

*The Egyptian Viper* is said to be the officinal viper of the Egyptians, and is by some supposed to be the ASP of Cleopatra, (by the bite of which that princess determined to die, rather than submit to be carried to Rome to grace the triumph of Augustus ) It is imported in considerable quantities every year to Venice, for the use of the apothecaries in the composition of treacle, and for other purposes. It is abundant in Egypt; and is found in other parts of Africa, as well as in Asia.

*The Cerastes, or Horned Viper*, generally grows to the length of about a foot or fifteen inches, and is distinguished by a pair of horns, or curved processes, seated and projecting from above the eyes. It is a native of Africa, and is chiefly found in sandy deserts and dry places. It closely resembles the common viper: its bite is perhaps still more to be dreaded, since, exclusive of the danger in treading accidentally on one of these reptiles unawares, it possesses a propensity of springing with great suddenness to a considerable distance, and assailing, without provocation, those who approach it. In many parts of Africa, the inhabitants are said to possess a method of stupifying these and other poisonous serpents, by the use of certain powerful preparations. Mr Bruce saw at Cairo a man who seized a cerastes, with his naked hand, from a number of others lying at the bottom of a tub: he next placed it on his bare head, covered it with his common red cap, and then put it into his breast, and tied it about his neck. He applied it to a hen, which it bit, and killed in a few minutes; and, at length, the man seized it by the neck, and, beginning at the tail, ate it like a carrot, or a stock of celery, without any seeming repugnance. Mr. Bruce adds, that all the black people in Sennaar are thus armed against the bite of the cerastes, and put them into their bosoms, and play with them, with perfect impunity.

*The Pambou-Rajah, or Royal Serpent*, is thus described by Mr. Haufner, in his perilous travels in the Island of Ceylon:—A monstrous serpent, of enormous size, was now crawling slowly out of the same open-



ing by which I had entered a few moments before, and thus my retreat was cut off on every side. I saw the terrific monster ready to swallow me; I saw his eyes glaring, and his throat swelling with fury. Shut in on every side, nothing remained but to throw myself into a canal, which was on my left;—before me I had the perpendicular wall of rock; on the right lay the impenetrable mass of brambles and weeds, which extended from the rock along the edge of the forest, and cut off all hope on that side. My situation was such as is not easily described; those who have been in similar circumstances can alone judge what I felt. An unconquerable irresolution still made me hesitate, but, seeing the hated monster open his immense jaws, and quicken his pace, and now only about a hundred paces from me, I rushed towards that part of the rock that overhung the canal. I made a leap about five feet from the rock, and an equal height from the ground, to lay hold of a cleft with my hand,—it succeeded! But for the threatened danger, which called forth all my strength and agility, I should never have been able to venture, much less to accomplish, such a leap. I remained some moments hanging by the hands over the abyss, before I could find any small projection on which to place my feet, and relieve my arms from the weight of my body. During this anxious struggle, I expected every moment to be devoured by the monster; fortunately it was not of the species that crawl upon their tails, with their heads erect, like the naga. By seizing upon every projection, and holding fast by every cleft, I at last reached the edge of the rock, and drew myself to the top. Being now beyond the reach of the monster that pursued me, I sank down near the edge of the rock. After remaining for some time in a sort of lethargy, I was roused by the reflection that I had lost all the means I had possessed of prolonging my life. I rose up, though scarce able to stand, and, casting my eyes towards the serpent, I saw it busy in devouring my rice, which was contained in a goat-skin bag. After swallowing it the monster made several circuits round the place, raising up the sand with its long tail, and still continuing the same horrible hissing. At last it departed,

entering the forest by the same opening by which it had come out. I gazed with horror upon its enormous body, covered with yellow and black-spotted scales; it sometimes raised its terrific head, and crept with a slow and regular motion. It appeared to be about fifty feet long, and its body was considerably thicker than mine.

*The Common, or Ringed Snakes*, are perfectly harmless and inoffensive, and are well-known inhabitants of moist and warm woods in this country, on the dry banks of which they are often seen during the summer, either sleeping or basking themselves.

The female deposits her eggs in holes fronting the south near stagnant waters; but more frequently in dunghills, in the form of a chain of ova, from twelve to twenty in number. These are about the size of the eggs of the blackbird, of a whitish colour, and covered with a parchment-like membrane. The young animals are rolled up spirally within the middle of the fluid, which nearly resembles the white of a fowl's egg. They are not hatched until the spring following the time when they are laid.

They lie torpid in winter, and in spring they uniformly cast their skins. This is a process which they also seem to undergo in the autumn. Mr. White says,—“About the middle of September, we found in a field near a hedge, the slough of a large snake, which seemed to have been newly cast. It appeared as if turned wrong side outward, and as if it had been drawn off backward, like a stocking or glove. Not only the whole skin, but even the scales from the eyes, were peeled off, and appeared in the head of the slough like a pair of spectacles. The reptile, at the time of changing his coat, had entangled himself intricately in the grass and weeds, in order that the friction of the stalks and blades might promote this curious shifting of his exuvia.”

*The Hooded, or Spectacle Snake*, is common in many parts of India. Its general length is three or four feet, and its thickness somewhat more than an inch. It is usually marked on the top by a very large and conspicuous patch, resembling a pair of spectacles. The usual colour of this snake is a pale rusty brown above, and beneath a bluish white, tinged with yellow.

When it is irritated or preparing to bite, this animal erects its body, bends down its head, and seems,



as it were, hooded by the expanded skin of the neck : hence its name of Cobra di Capello, or Hooded Serpent. (*See the Engraving.*)

Mr. Forbes says, “the cobra di capello, or hooded snake (*coluber naja*), called by the Indians the naag, or nagao, is a large and beautiful serpent, but one of the most venomous of all the coluber class ; its bite generally proves mortal in less than an hour.

“Of this genus are the dancing-snakes, which are carried in baskets throughout Hindostan, and procure a maintenance for a set of people, who play a few simple notes on the flute, with which the snakes seem much delighted, and keep time by a graceful motion of the head ; erecting about half their length from the ground, and following the music with gentle curves, like the undulating lines of a swan’s neck. It is a well-attested fact, that, when a house is infested with these snakes, and some others of the coluber genus, which destroy poultry and small domestic animals, as also by the larger serpents of the boa tribe, the musicians are sent for ; who, by playing on a flageolet, find out their hiding-places, and charm them to destruction : for no sooner do the snakes hear the music, than they come softly from their retreat, and are easily taken. I imagine these musical snakes were known in Palestine, from the Psalmist comparing the ungodly to the deaf adder, which stoppeth her ears, and refuseth to hear the voice of the charmer, charm he never so wisely.

“When the music ceases, the snakes appear motionless ; but, if not immediately covered up in the basket, the spectators are liable to fatal accidents. Among my drawings is that of a cobra de capello, which danced for an hour on the table, while I painted it ; during which I frequently handled it, to observe the beauty of the spots, and especially the spectacles on the hood, not doubting but that its venomous fangs had been previously extracted. But the next morning my upper servant, who was a zealous Mussulman, came to me in great haste, and desired I would instantly retire, and praise the Almighty for my good fortune : not understanding his meaning, I told him that I had already performed my devotions, and had



HOODED SNAKE OF HINDOSTAN.







not so many stated prayers as the followers of his prophet. Mahomed then informed me, that, while purchasing some fruit in the bazar, he observed the man who had been with me on the preceding evening, entertaining the country people with his dancing snakes ; they, according to their usual custom, sat on the ground around him ; when, either from the music stopping too suddenly, or from some other cause irritating the vicious reptile which I had so often handled, it darted at the throat of a young woman, and inflicted a wound of which she died in about half an hour. Mahomed once more repeated his advice for praise and thanksgiving to Alla, and recorded me in his calendar as a lucky man."

"Dr. Russell has distinguished between the venomous and the harmless species, in the three genera of *boa*, *coluber*, and *anguis*. He observes, "that, of forty-three serpents examined and described by him, seven only were found with poisonous organs : and, upon comparing the effects of the poison of five oriental serpents on brute animals, with those produced by the poison of the rattle-snake, and the European viper, it may in general be remarked that they all produce morbid symptoms nearly similar, however much they may differ in the degree of their deleterious power, or in the rapidity of its operation. The bite of a rattle-snake in England killed a dog in two minutes ; the bite of the most pernicious snake in India was never observed to kill a dog in less than twenty-seven minutes."

This animal is also an object of superstitious veneration among the Gentoo Indians, founded on some traits of legendary mythology : they seldom name it without adding some epithet, such as the royal, the good, the holy. A dog, bitten by a hooded snake, died in twenty-seven minutes ; and another survived fifty-six minutes. A chicken died in less than half a minute, though others survived a couple of hours, depending, probably, on the heat of the weather, and the condition of the serpent at the time.

The *cobra manilla* is known on the Malabar coast as the bangle snake, and this name is a translation of *wala caripan*, which, in the Malabar language, signifies the deadly bangle, or bracelet ; it has two fang-teeth, exactly like those of the cobra di capello, and its bite is reckoned equally dangerous. The length varies from six to twelve or fourteen inches ; but the



female, although rather larger, has less brilliant colours than the male. Mr. Thomson, during his residence in Bengal and the Upper Provinces, had tried, without success, to obtain the snake called cobra manilla.

The late Gen. Gillespie received the bite of this serpent when he was plucking a peach, and in two or three minutes afterwards lost all sensation. The last thing he recollected was some persons calling out for eau de luce, which, applied very copiously, both internally and externally, he believed, saved his life; but he added, that his constitution was not fully restored in two or three years.

#### SEA-SERPENT, OR SCOLIOPHIS ATLANTICUS.

This animal, taken off New England, in 1817, had the general form and external characters of a serpent; but was remarkably distinguished from all others of that class, by a row of protuberances along the back, apparently formed by undulations of the spine. From the back of the head to the first of these protuberances, was a distance of three inches and three-fifths of an inch, during which the spine was straight. Between this place and the vent, its undulations were nearly regular, twenty-four of these protuberances, about equally distant from each other, occupying the space between the neck and the vent. From the latter to the twenty-fifth protuberance, the spine formed a straight line, of the length of one inch and nine-tenths; its undulations there commenced again, and were continued quite to the extremity of the tail, forming sixteen more distinct protuberances. The size of these forty protuberances were proportioned to that of the body at the places where they were respectively situated. The body could be bent with facility upward and downward as represented in *plate 1*, a circumstance not common to other serpents. Those parts of the spine, which were straight, admitted much less motion in a vertical direction, than those which were undulatory.

	<i>ft.</i>	<i>in.</i>
The length of the head was . . . .		1 $\frac{3}{4}$
From the back of the head to the vent . . . .	2	2 $\frac{4}{5}$
From the vent to the end of the tail . . . .		7 $\frac{3}{5}$
Whole length . . . . .	2	11 $\frac{1}{2}$

The smallest circumference of the neck was one inch and a half. The circumference of the body over the largest protuberances  $2\frac{4}{5}$  inches. The circumference of the body between the two largest protuberances  $2\frac{2}{5}$  inches. The size of the body diminished suddenly at the vent, immediately beyond which the circumference of the tail was one inch and three-fifths. The tail was round, and tapered very much, terminating in a point.

The head was rather larger than the neck, flattened, its anterior part pyramidal, rounded at the nose; the upper lip entire. The back part of the head was so much bruised that its original form was not easily distinguishable. In the fragments of the upper jaw were seen three slender recurved teeth; in those of one side of the under jaw seven similar teeth, and the sockets of three others. No venomous fangs were found. The tongue was bifid, each fork being nearly half an inch long. The nostrils, situated between the second and third plate from the nose, were large and oval. Between the nostril and the eye was a longitudinal hollow, bounded beneath by the upper lip, above by a very prominent superciliary ridge, extending beyond the eye. The eye was very large, nearly round, its breadth apparently a little diminished by the superciliary ridge, jutting over it. The whole head was covered with plates, but those on the top of it were so much broken, that their number and form could not be perfectly ascertained. The under jaw was divided by a longitudinal furrow, having a triangular scutella at its anterior extremity, and two rows of scutellæ on each side.

The body was covered with hexagonal flat scales, those on the back narrowest; the throat with three or four rows of small scales; the belly with a hundred and eighty plates; the tail with ninety-three pairs of scutellæ. Over the vent was one pair of scutellæ; at its sides four pair, the scales opposite to which were smaller than those on any other part of the body.

The colour of the head and of the upper part of the body and tail was an uniform deep brown; that



of the belly and under part of the tail a bluish lead-colour, lightest in the middle. The whole of the under jaw and throat was white, which colour extended in a clouded streak some way down under the neck, and fore-part of the belly.

In the general disposition of its colours, in the number, form, and arrangement, of the scuta and scutellæ, this animal approaches most nearly to the *Coluber Constrictor*; from which, however, it is strikingly distinguished by its undulating back, by its body being larger in proportion to its length, and diminishing more suddenly at the vent, the tail shorter, the teeth much larger and more distant, and the colour brown instead of black.

This animal is probably amphibious, although it has not the flat tail of the *Pelamides*; nor did the examination of its exterior enable us to discover any thing in its structure peculiarly adapting it to a residence in the water, excepting only the remarkable facility of bending in a vertical direction. This motion, which may be observed in the leech and various other aquatic animals, is quite as important as a horizontal one to an inhabitant of the ocean, and comparatively useless in an animal confined to the land.

*Description of the Engraving.*

*a. a.* Portions of the head and throat so far destroyed that their structure could not be ascertained.

Fig. 1. Section of the body.

Fig. 2. Dissection of the same on the opposite side. A. A. A. Muscles of the back. B. Lateral muscles. C. Intercostal muscles.

Fig. 3. Inside view of the cavity of the ribs and spine, with the internal muscles crossing the ribs.

Fig. 4. Side view of a vertebra.

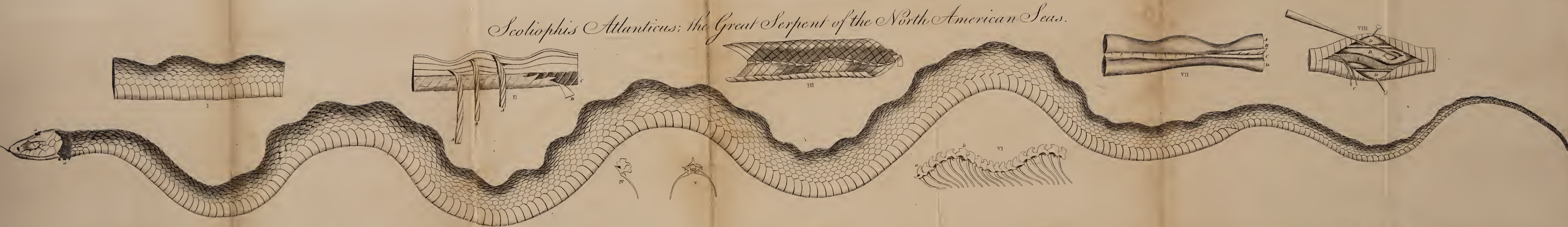
Fig. 5. Front view of the same.

Fig. 6. Portion of the spine, shewing the varieties of the vertebrae, and the direction of the ribs.

Fig. 7. Portions of viscera of the first section. A. The lungs, their inequalities corresponding to the cavities in the spine. B. The mesentery, which is attached on each side to the ribs. C. The great vein. D. The *Œsophagus*.

Fig. 8. Represents an opening in the throat. A. The trachea. B. The *Œsophagus*, with a blowpipe inserted into its cavity. C. Elastic retractile filaments of the tongue. D. D. Extremities of the ribs.

*Scoliophis Atlanticus; the Great Serpent of the North American Seas.*



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## LECTURE XLV.

## MAMMIFEROUS ANIMALS,

INCLUDING THE APE TRIBE, AND THE ORDERS OF  
QUADRUPEDS.

THESE Beings, like Insects, are provided with corporal arrangements which enable them to move from place to place—*i. e.* their roots or absorbents centre in the stomach, by which they are enabled to carry about with them the soil or nutriment which sustains them, or which, in other words, replaces the parts of their systems that are carried off or evaporated by animal heat.\*

The animals called *mammiferous* by LINNE, are all those which suckle their young, whatever be their forms or habits.

The skins of nearly all mammiferous animals are covered with *hair*, a slow conductor of heat, liable to little injury, and bestowed in quantity proportioned to the necessities of the animals, and the climates which they inhabit; or rather, as animals not so covered could not live in cold climates, none such are found there, and *vice versa* in regard to those not covered with hair in hot climates. Breathing creates heat by fixing gas, which heat is carried off by the skin, and in cold countries would be carried off too quickly but for the hair or wool, which are slow conductors of heat.

The *head*, as the receptacle of the brain in all the higher orders, is also the seat of the principal organs of sense, the mouth, the nose, the eyes, and the ears. Through the *mouth* they receive their nourishment or soil into the

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\* Animal heat, according to the new system, is caused by the fixation in the lungs of the moving atoms of atmospherical gas in which all animals live.



cavity of the stomach. The *teeth* are used not only for the mastication of this food, but are weapons of defence. They are inverted into two moveable bones called jaws. The front teeth are wedge-shaped, and their sharp edges being brought into contact divide the aliment. Next to the front-teeth, on each side, are the canine teeth or tusks; these are conical and pointed, and their use is to tear the food. The back-teeth, between which the food is masticated, are called grinders. In animals which live on vegetables, these are flattened at the top; but, in carnivorous animals, their surfaces are furnished with sharp and conical protuberances. From the numbers, form, and disposition of the teeth, the various genera of quadrupeds have been arranged by Linnæus; but although his arrangements are not violated in the present work, they are too technical to interest the general reader, and are therefore not obtruded on his attention.

The *nose* is a cartilaginous body pierced with two holes called nostrils. This is prominent, flat, compressed, turned upward, or bent downward. In beasts of prey it is often either longer than the lips, or of equal length with them. In a few animals it is elongated into a trunk or proboscis, and in one tribe, the Rhinoceros, is armed with a horn.

The *eyes* of quadrupeds are, generally, defended by moveable eyelids, the outer margins of which are furnished with hairs, called eye-lashes. The opening of the pupil is usually circular; but in some animals it is contracted into a perpendicular line, and in a few it forms a transverse line.

The *ears* are openings generally accompanied by a cartilage which defends and covers them, called the external ears. In wild animals the ears are erect and somewhat funnel-shaped, capable of having their opening turned towards the quarter from which the sounds proceed; but in the tame or domestic animals, the ears are generally long and pendulous.

The head is joined to the body by the neck; and those animals that often extend their arms or anterior feet forward, to seize upon objects, or to fly, have, annexed to the upper part of the thorax, *clavicles* or collar-bones.

The collar-bones are wanting in those animals which use their foremost extremities for progressive motion only.

The feet are usually divided into toes or fingers; but the extremities of some are distinguished by a single corneous substance, called a hoof. The toes of a few terminate in broad flat nails, and of many others in pointed claws. The toes of animals that reside much in the water are sometimes connected by a membrane. Sometimes the digitations of the anterior feet are greatly elongated, and the intervening space being filled by a membrane which extends round the hinder legs and the tail, they are enabled to rise into the air.

Man, and some other animals, are capable of seizing objects, by surrounding and grasping them with their hands; for which purpose the fingers are separate, free, flexible, and long. Apes and Lemurs have fingers on their hands and feet.

The warm and red fluid called blood, after receiving the motion of gaseous atoms in the lungs, flows through the body of the heart into every part of the system, by contracting vessels called arteries, and returns by others denominated veins. The various fluids are separated from the blood during the circulation, which are carried through little vessels and lodged in proper reservoirs. These fluids are termed *secretions*, and are adapted to various productions in the system.

The *lungs*, gas fixers or prime movers, of the animal machine consist of two lobes, and are placed within the thorax or chest. Into these the atmospheric air is inspired through the nostrils; and in them the vital gas is fixed, and heat is thereby transferred; the former, containing the only principle proper for the maintenance of life, and the latter being necessary towards keeping up the fluidity of the blood.\* The gas which remains after moveable parts are fixed is expired. This act of draw-

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\* "Atomic motion," says Sir R. Phillips, "is heat—and gas is constituted of atoms in motion. Animals live immersed within atmospheric gas, composed of parts called oxygen and nitrogen. This gas, or its oxygenous part, is absorbed and fixed by the lungs, which are the *primum mobile* of all animal systems, transferring its own motions to them, and to the blood contained in them. The action or



ing in the atmospheric air, fixing the vital gass, transferring its motion or heat, and ejecting the unfixable gas, is termed respiration, and is an operation essential to the continued vitality of every being.

In *digestion* it is that the juices of the food or soil, calculated to nourish and support the body, become separated from the other less useful parts of the food. Reduced to a pulp; by means of the teeth and saliva, these pass through a canal which terminates in a large bag or reservoir, called the stomach, where the roots of the system are situated. Here the aliment, or soil by which the animal roots are fed, is further dissolved by new juices, undergoes a trituration from the action of the stomach; and the nutritive juices, which, on their union, are denominated *chyle*, become separated. These juices are taken up by roots called *lacteals*, and become converted into new blood and flesh. The alimentary canal again contracts on leaving the stomach, and, arranged in a great variety of folds, is called intestines. The residue of what is not converted into *chyle* traverses these numerous sinuosities, and is at length expelled the body as excrement.

The bodies of all animals are supported by a *frame* of bones called a *skeleton*, to which are attached *muscles* for

stroke of the lungs is successively repeated, and the motion increased and accelerated; and hence, a degree of heat in animals above that of the gas within which they are immersed. The motions of the heart, the circulation of the blood, &c. &c. are all consequential, and appropriators or continuators of the power acquired by the lungs from the gas, and the whole becomes a species of living lever, which is enabled by its own individual power to act by its lower extremities against the earth, and transfer by re-action the force so derived to the superior parts and opposite extremities. The motions of the atoms of gas transferred to the lungs create the individual energy or principle of life, and confer on the whole muscular lever the ability to act against the ground on the suggestion of the will, and impart re-action through the system. But, (continues this writer) as soon as the heat constantly acquired by the lungs in fixing gas, arrives at a certain intensity, dispersion and evaporation take place, of the fluids of the system, through the pores of the skin, and hence the necessity of supplies of new matter called food. For which purpose the wonderful and sublime Architect of the Universe has contrived in loco-motive beings the cavity of the stomach, in which centre the absorbents or

motion, assemblages of fibres held together by membranes, and terminating in a kind of cords, denominated *tendons*. The muscles, when excited, transfer the motion derived from re-action against the earth to the different parts of the body; and it is this action and re-action which gives to all animals the loco-motive power. The sensations of animals arise from an irritation taking place on the ends of certain chords called *nerves*, which are either prolonged from the spinal marrow, or are united in pairs in the brain, or fulorum of the nervous or medullary system.

Quadrupeds and Mammiferous Animals have been divided by Linné into seven orders:

1 *Primates*, which have four front-teeth in each jaw; and one canine-tooth on each side in both jaws. The principal animals of this order are the APES, LEMURS, and BATS.

2. *Bruta*. These are entirely destitute of front-teeth. The tribes consist of the SLOTHS, ANT-EATERS, RHINOCEROSES, ELEPHANTS, and MANATI.

3. *Feræ*. The *Feræ* have generally six front-teeth in each jaw; and one canine-tooth on each side, in both

roots of the animal system, and into this cavity it is necessary that food be introduced from time to time, where it serves the purposes as soil at the roots of fixed vegetables. Thus, animals by means of soil in the stomach derive their support on the same principle as vegetables, but are able, by conveying this soil, to move from place to place. The varied forms and habits of animals are (says he) necessary to the fullness of creation, and that fullness is also necessary to the refixing of the volatile parts of the earth, which parts are returned to their origin by animal excrements and remains, and thus maintain a circle of perpetual existence." How much do such clear and conclusive views of Nature exalt our opinions of the sublime Author of such comprehensive and efficient, yet simple arrangements! And how vast an improvement we make in our knowledge of God and his works by respecting the voice of common sense on such subjects, instead of puzzling ourselves with the eternal and senseless jargon of the schools, which, from the days of Aristotle down to our own times, have bewildered themselves on these subjects.

" All Nature is but Art unknown to thee,  
All chance direction which thou can'st not see.  
All discord, Harmony not understood,  
All partial Evil, Universal Good."



jaws. They consist of SEALS, DOGS, CATS, WEESELS, OTTERS, BEARS, KANGAROOS, MOLES, SHREWS, and URCHINS.

4. *Glires*. The animals denominated Glires have two long front-teeth in each jaw ; and no canine-teeth. They consist of the PORCUPINES, CAVIES, BEAVERS, RATS, MARMOTS, SQUIRRELS, DORMICE, JERBOAS, HARES, and HYRAXES.

5. *Pecora*. The Pecora are destitute of front-teeth in the upper jaw, and on their feet have cloven hoofs. All the species ruminates or chew their cud. The tribes are the CAMELS, MUSKS, DEERS, GIRAFFES, ANTELOPES, GOATS, SHEEP, and OXEN.

6. *Belluæ*. These have obtuse front-teeth in each jaw, and undivided hoofs on their feet ; and consist of the HORSES, HIPPOPOTAMUSES, TAPIRS, and HOGS.

7. *Cete* or *Whales*. Instead of feet, the Cete, which comprise the NARWALS, WHALES, CACHALOTS, and DOLPHINS tribe, have fins. On the front and upper part of the skull there are several spiracles or breathing holes. The teeth differ in the species ; and the tail is flattened. For the sake of the more obvious natural division, we have described this order among the other inhabitants of the deep.

### THE APE TRIBE.

This truth shines bright to human sense,  
Each strong affection of the unconscious brute,  
Each bent, each passion of the smallest mite,  
Is wisely given ; harmonious they perform  
The work of perfect reason.

DYER.

THE animals of this extensive tribe are usually arranged in three divisions, of APES, BABOONS, and MONKEYS.—APES are destitute of tails: they walk upright, and their hands and feet nearly resemble those of men. They are mild and gentle, and they imitate human actions more closely, and are susceptible of greater attainments, than any others of the same tribe. BABOONS have short tails, and generally walk on all fours. Some baboons are as tall as men, have long faces, sunken eyes, and are extremely disgusting in their appearance, and are for the most part sullen and ferocious. MONKEYS have tails in

general longer than their bodies. They are lively, agile, full of frolic, chatter, and grimace. From the structure of their members, they have many actions in common with the human kind. Most of them are fierce and untameable; some are of a milder nature, and will show a degree of attachment; but in general they are endowed with mischievous intellects; and are therefore filthy, obscene, and lascivious. They inhabit the woods, and live on trees; feeding on fruits, leavee, and insects. In general, they are gregarious, going in vast companies; but the different species never mix with each other, alway keeping apart and in different quarters. They leap with vast activity from tree to tree, even when loaded with their young, which cling to them. They are the prey of leopards and others of the feline race; and of serpents, which pursue them to the summits of the trees, and swallow them entire. They are not carnivorous, but for mischief's sake will rob the nests of birds of the eggs and young. In the countries where they most abound, the sagacity of the feathered tribe is more marvelously shown in their contrivances to fix the nest beyond the reach of these invaders.

Monkeys generally live in extensive troops, and some naturalists have asserted that they form a sort of republic, in which a certain degree of discipline is kept up; that they always travel in order, conducted by chiefs, who are the most experienced animals of their troop. The negroes of Africa believe these animals to be a vagabond race of men, who are too indolent to construct habitations or to cultivate the ground.

In many parts of India, says Mr. Bingley, Apes and Monkeys are made objects of worship by the natives, and temples of the greatest magnificence are erected in honour of them. Their numbers are almost infinite. They frequently come in troops into the cities, and enter the houses at all times with perfect freedom. In Calicut, however, the inhabitants contrive to keep them out of their dwellings; but to effect this they are compelled to have all their windows laticed. In Amadabad, the capital of Guzerat, there are three hospitals for animals, where sick and lame monkeys are fed and cherished.



## THE OURANG-OUTANG

Has sometimes obtained the appellation of the "*wild man of the woods*." A variety of essential differences have also been discovered in the internal conformation of this animal; which sufficiently evince, that notwithstanding the apparent affinity to man, the interval which separates the two species is immense; the resemblance in figure and organization, and the imitative movements which seem to result from these similarities, neither make him approach the nature of man, nor elevate him above that of the brute.

It has a flat face, and a deformed resemblance of the human; ears like those of a man; the hair on the head longer than on the body. The body and limbs are covered with reddish and shaggy hair; longest on the back, thinnest on the fore parts. The face and paws are swarthy; the buttocks covered with hair. They inhabit the interior parts of Africa, the Isles of Sumatra, Borneo, and Java; are solitary, and live in the most desert places. They grow to the height of six feet; have prodigious strength, and will overpower the strongest man. The old ones are shot with arrows, the young alone can be taken alive. They will attack and kill the negroes who wander in the woods; and will throw stones at people that offend them. They sleep in trees; and make a sort of shelter from the inclemency of the weather. They are of a grave appearance and melancholy disposition, and even when young not inclined to frolic. They go erect, and are very swift.

The ourang-outangs on the banks of the Ganges are larger and more mischievous, than in any part of Africa; the negroes dread them, and cannot travel alone in the country without running the hazard of being attacked by these animals, who often present them with a stick, and force them to fight. The Portuguese say, that they often hoist up young girls, from seven to twelve years old, into trees, who are wrested from them without much difficulty. Most of the negroes imagine they are a foreign nation come to inhabit their country, who do not speak, for fear of being compelled to work. When taken young, they are capable of being tamed, and taught to perform many menial offices. In Sierra Leone is a species so strong limbed, and so industrious, that, when properly trained and fed, they work like servants; these generally





*The Orang Outang.*



*The Gibbon Monkey.*





walk on the two hind feet; pound any substances in a mortar; go to bring water from the river in small pitchers, which they carry full on their heads. But when they arrive at the door, if the pitchers are not soon taken off, they allow them to fall; and when they perceive the pitchers overturned and broken, they weep bitterly. They are taken with snares, taught to walk on their hind feet, and to use their fore feet as hands in performing different operations, as rinsing glasses, carrying drink round to the company, turning a spit, &c. Guat saw at Java a very extraordinary ape, a female, whose figure had a very great resemblance to that of man.

She was very tall, and often walked erect on her hind feet; then concealing with her hands the sexual part. Except the eyebrows, there was no hair on her face, which much resembled the grotesque female faces of the Hottentots at the Cape. She made her bed neatly every day, lay upon her side, and covered herself with the bed-clothes. When her head ached, she bound it up with a handkerchief; and it was amusing to see her thus hooded in her bed; many other actions appeared extremely singular; but the design of bringing her to Europe, being for exhibition as a show, probably she had been taught many of these monkey tricks, which other people considered as natural to the animal. She died on board ship, about the latitude of the Cape of Good Hope.

Carreri saw one which cried like an infant, walked upon its hind feet, and carried a mat under its arms to lie down and sleep upon.

Buffon saw an orang-outang that was mild, affectionate, and good-natured. His air was melancholy, gait grave, movements measured, dispositions gentle, and very different from those of other apes. He had neither the impatience of the Barbary ape, the maliciousness of the baboon, nor the extravagance of the monkeys. It may be alleged, that he had the benefit of instruction; but the other apes were educated similarly. Signs and words were alone sufficient to make him act, but the baboon required a cudgel, and the other apes a whip; for not one of them would obey without blows. This animal would present his hand to conduct his visitors, and walk as gravely along with them as if he had formed a part of the company. He would sit down at table, unfold his towel, wipe his lips, use a spoon or a fork to carry the



victuals to his mouth, pour his liquor into a glass, and make it touch that of the person who drank along with him. When invited to take tea, he brought a cup and a saucer, placed them on the table, put in sugar, poured out the tea, and allowed it to cool before he drank it. All these actions he performed without any other instigation than the signs or verbal orders of his master, and often of his own accord. He did no injury to any person: he even approached company with circumspection, and presented himself as if he wanted to be caressed. He lived one summer at Paris, and died in London the following winter.

M. de la Brosse, a French navigator, who was in Angola in the year 1718, and who purchased from a negro two ourang-outangs, remarks, that these animals would sit at table like men, and eat there every kind of food without distinction: that they would use a knife, a fork, or spoon, to cut or lay hold of what was put on their plate; and that they drank wine and other liquors. At table, when they wanted any thing, they easily made themselves understood to the cabin-boy; and when the boy refused to answer their demands, they sometimes became enraged, caught him by the arm, bit, and threw him down. The male was seized with sickness, and he made the people attend him as if he had been a human being. He was even bled twice in the right arm, and, whenever afterwards he found himself in the same condition, he held out his arm to be bled, as if he knew that he had formerly received benefit from the operation.

Buffon describes a female ourang-outang from the island of Borneo, which was brought alive into Holland, in 1776, and lodged in the Menagerie of the Prince of Orange. She was extremely gentle, and exhibited no symptoms whatever of fierceness or malignity. She had a somewhat melancholy appearance, yet loved to be in company, and particularly with those persons to whose care she was entrusted.

One morning she contrived to escape from her chain; and, soon afterwards, was seen ascending the beams and oblique rafters of the building with wonderful agility. With some trouble she was retaken; but the efforts of

four men were found necessary to secure her. Two of these seized her by the legs, and a third by the head, whilst the other fastened the cord round her body. During the time she was at liberty she had taken the cork from a bottle of Malaga wine, drank the wine to the last drop, and then set the bottle again in its place. She would eat of almost every kind of food that was given to her; but she lived chiefly on bread, roots, and fruit. Carrots and strawberries she was peculiarly fond of, as well as of several kinds of aromatic plants, and of the leaves and root of parsley. She also ate meat, both boiled and roasted, as well as fish; and was fond of eggs, the shells of which she broke with her teeth, and then emptied, by sucking out the contents. When strawberries were given to her on a plate, it was amusing to see her take them up, one by one, with a fork, and put them into her mouth, holding, at the same time, the plate in the other hand. Her usual drink was water, but she would also eagerly drink all sorts of wine, particularly Malaga. After drinking, she wiped her lips; and after eating, if presented with a tooth-pick, she would use it in a proper manner. One day, seeing the padlock of her chain opened with a key, and shut again, she seized a little bit of stick, and put it into the key-hole, turning it about in all directions, and examining to ascertain whether the padlock would not open.\*

#### THE PIGMY APE.

This is a very hardy animal, and even in Europe bring forth young. It is near the size of a fox, walks on two

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\* In 1817, a young ourang-outang was brought to England, in one of the ships attached to the expedition which had sailed with Lord Amherst to China. It then measured only about two feet seven inches in length, from his heel to the crown of his head. When brought to London, in the month of August, 1817, this animal was deposited, for exhibition, in the menagerie at Exeter 'Change. He was there found to be extremely tame and gentle, and frequently took food and sat by the fire, in the keeper's apartment. He increased astonishingly in all his dimensions. He died on the 1st of April 1819. The immediate cause of his death was the changing of his teeth, from which it was ascertained that he must have been extremely young when first caught. His skin and skeleton were deposited in the museum of the College of Surgeons in London.—*Bingley*.



feet, is easily tamed, very docile and frolicsome. It mimics our smiles and our frowns ; and, according to Limé, imitates the forms of salutation among the Caffres. Its memory is so tenacious, that old benefactors are recognized after several years absence. Its chief food being fruit, gardeners regard it as peculiarly mischievous.

The Pigmy Ape, when on its hind legs, is about two feet high. Its face is almost naked, and is somewhat long and wrinkled. The eyes are round, reddish, and possess great vivacity. The general colours of the body are olive-brown above, and yellowish on the belly ; and, in many individuals, part of the breast and belly have a large dark-coloured mark.

According to Desfontaines, these animals live in great troops ; and abound in Sara, in ancient Numidia. Their food consists of pine-apples, nuts, Indian figs, melons, roots, and vegetables. They often sally forth in a body to attack gardens or plantations, and, notwithstanding all the care that is taken to prevent their depredations, they are often successful. Strabo judiciously remarks, that no person entitled to credit had ever ventured to assert he had seen this nation. Aristotle mentions them, *from hear-say*, as mounted on goats, rams, and partridges. Probably this credulity has occasioned the Indians to tamper with it, by embalming this species, and vending them to merchants as real pigmies.

Buffon kept a male pigmy ape upwards of a year. Its usual mode of walking was on four feet ; and it could seldom be induced to walk upright for more than a few minutes at a time. Its greatest delight seemed to be in leaping, climbing, and catching at every thing within its reach. Whenever it was left alone it exhibited symptoms of discontent, by raising a kind of mournful cry. In its disposition it was so mild, that it was rarely known to bite with severity even any one who teased or offended it.

#### THE LONG ARMED APE.

This animal is distinguished by the extraordinary length of its arms, which reach to the ground, when its body is upright, and give it a disgusting appearance.

Its face is flat, and of a tawney colour, surrounded with a circle of grey hairs, which add to the singularity of its aspect ; its eyes

are large and deep sunk ; its ears round and naked ; and its body covered on all parts with black rough hair, except its buttocks, which are quite naked. It is of a mild, gentle, and tractable disposition ; feeds on fruits, leaves, and the barks of trees ; is a native of the East Indies, Sumatra, and the Molucca isles ; and measures from three to four feet in height.

One was kept many years at the Castle of the Duke of Buccleugh, Dalkeith. At first he was very tame and gentle, and affectionate to his keepers ; but for several of the concluding years of his life, he was very wild, and therefore was confined. Lord Clive had one three feet high, very elegant in form, and its arms not extremely long ; it was gentle, good natured, full of frolic ; its face, ears, crown of the head, feet, and hands, were black ; and the other parts of the body and arms were covered with silvery hairs.

#### THE BARBARY APE.

This animal is more untractable than the rest of its species.

Its head is large, and its nose prominent ; its face long, and not unlike that of a dog ; it likewise differs from the last, in having cheek pouches, which it frequently fills with food before it begins to eat. The canine teeth are large and strong ; and its ears are round, and something like those of a man ; the body is covered with hair of a brown colour, inclining to green, but lighter on the belly. When standing erect upon its hind legs, it is generally from two feet and a half to four feet high. It walks oftener on four, than on two feet ; and, when resting, supports its body on two prominent callosities, situated on its buttocks. This is a very common species, and is found in most parts of Africa, from Barbary to the Cape of Good Hope.

Buffon kept one several years. In summer he was fond of being in the open air ; in winter he was kept in a room without fire. Though not delicate, he was always melancholy, and sometimes dirty ;—probably from being ill-educated ; as others of the kind have differed much in the opposite qualities. He employed the same grimaces to indicate either his anger, or his appetite. His movements were brisk, his manners gross, and his aspect more ugly than ridiculous. When agitated with passion, he exhibited and ground his teeth. He filled the pouches of his cheeks with the food given him,



and refused only raw flesh, and any thing which had been fermented. He was always chained, because, though long domesticated, he was not civilized, nor had he any attachment to his masters; though others have been obedient, gay, taught to dance, to make gesticulations in cadence, and to bear to be clothed.

Lade mentions hunting this species, near the Cape of Good Hope. He says, "I cannot describe either the arts practised by these animals, or the nimbleness and impudence with which they returned after having been pursued by us. Sometimes they permitted us to approach so near, that I was almost certain of seizing them. But when I made the attempt, they sprung, at a single leap, ten paces from me, and climbed trees with equal agility, whence they viewed us with indifference, seeming pleased with our astonishment. Some were so large, that had not our interpreter assured us of their pacific disposition, our number would not have appeared adequate to support an attack. As no purpose could be answered by killing them, we did not use our guns. But, the Captain happening to aim at a very large one on the top of a tree, who had fatigued us in a long pursuit; the menace probably reminded the animal of consequences from similar attitudes; for he was so terrified that he fell down motionless at our feet, and we had no difficulty in seizing him. But, on recovering from his stupor, it required all our dexterity and efforts to keep him; we tied his hands together; but he employed his teeth in so furious a manner, that we were compelled to cover his head with our handkerchiefs."

#### THE BABOON

Differs from animals of the ape kind, not only in external appearance, but also in temper and disposition. Fierce, untractable, and libidinous, its disposition seems to partake of the hideous and disgusting deformities of its outward figure. Its body is thick, compact, and nervous, and its strength prodigious. Neither art nor caresses can render it any degree docile or obedient. It seems to be continually fretting with rage, and seeking every opportunity of shewing its savage and vicious propensities. In





*Green Monkey.*



*Great Baboon.*





a state of captivity, it must be kept closely confined ; and even in that state, it sometimes shakes the bars of its cage so powerfully with its hands, as to excite the utmost terror in the spectator.

This animal is from three to four feet high ; very strong built ; with a thick body and limbs, and large callosities behind, which are quite naked and red. Its tail is crooked, and about seven or eight inches long. Its snout is long and thick ; and on each cheek is a pouch, for receiving its superfluous provision. It is covered with long thick hair, of a redish brown colour ; and walks more commonly on all-fours than erect. Its hands, as well as its feet, are armed with long sharp claws.

The baboon inhabits the hottest parts of Africa, and feeds on fruits, roots, and other vegetables ; and sometimes they assemble in troops, and plunder gardens and cultivated grounds. They are extremely dexterous in throwing the fruit from one to another, and by this means do incredible damage in a very short time.

In Siam they frequently sally forth in troops to attack the villages during the rice harvest ; and they plunder the habitations of whatever provisions they can lay their paws on. Fruit, corn, and roots, form their principal food ; and, in obtaining these, they often commit the most violent outrages. The capricious disposition of this baboon often leads it to the most deliberate acts of mischief. Dr. Goldsmith says he has seen one of these animals break a whole service of china, evidently by design, yet without appearing to be in the least conscious of having done amiss.

#### THE RIBBED-NOSE BABOON

This singular creature is no less remarkable for its great size and strength, than for the variety of beautiful colours on different parts of its body.

His head is very large, and his muzzle long. Its nose is marked with broad ribs on each side, of a fine violet blue-colour ; from his nostrils runs a mucus that is licked into the mouth, in a disgusting manner ; a vermilion line begins a little above the eyes, and running down on each side of the nose, which is somewhat similar to that of a hog, spreads over the tip of it, while deep longitudinal wrinkles augment his sullen aspect ; the insides of the ears are blue, which gradually soften to a purple, and terminate in vermilion ; the body is squat ; the rump is also of a vermilion co-



lour; and the beautiful colours on the hips are gradations from red to blue: the hair on the forehead is long, turns back, and forms a sort of pointed crest; its beard is dark at the root, orange at the middle, and yellow at the end: the back and legs are covered with short hair, of a dark-brown colour, mixed with yellow; the breast and belly, with long whitish hair, speckled with small dark spots; its tail is short and hairy; nails flat; and its feet and hands are flat and naked. He is larger and stronger, but not more mischievous than other baboons.

The **PIG-TAILED BABOON**, so termed from its short, naked, pig-like tail, is the least of all the baboon kind.

Its muzzle is large and thick; face and ears naked, and of a flesh colour; the hair on the head and back is of a deep olive: it has hazel eyes; and callosities on the buttocks, which are naked, and of a red colour.

It is a native of Sumatra and Japan, and is instructed by mountebanks to perform many tricks.

#### THE DOG-FACED BABOON.

This animal is distinguished by a longer tail than the rest of its kind; in this respect, it seems to bear some affinity to the monkey, and has been mentioned under that denomination by several naturalists.

Its head is large and flat, its muzzle strong, long, and thick, covered with a smooth red skin; ears pointed and hidden in hair; its eyes small, its face naked, and of an olive colour; the hair on its forehead is separated in the middle, and hangs down on each side of the face, from thence down its back as far as its waist; it is long and shaggy, of a blueish grey colour, freckled with dark spots; the hair on the lower part of the body is short; and its rump bare and red. It is from three to five feet high.

It inhabits the hottest parts of Africa and Asia, lives in troops, and commits great depredations in gardens and cultivated grounds.

The **URSINE BABOON** is not unlike the last, but rather less.

Its nose is long, its head large, its ears short, and its forehead high and prominent, terminating in a ridge; the body is thick and strong, and covered with long dusky hair, which gives it the appearance of a young bear; its tail is half the length of the body; the buttocks are red.

This animal is very numerous about the Cape of Good Hope. Troops of them assemble together, and make ex-





*Barbary Ape.*



*Ribbed-Nose Baboon.*





peditions for the sake of plunder, in which they observe the utmost precaution. To prevent surprise, they place a sentinel, which, upon sight of a man, gives a loud yell; when the whole troop retreat with the greatest precipitation. It is highly entertaining to see the females carrying off their young ones clinging to their backs.

This seems to have been the kind of ape that M. le Vaillant had with him in his travels through the southern parts of Africa, and to which he gave the name of *Kees*. It was more watchful than any of his dogs, and frequently warned him of the approach of predatory animals, when the dogs were off their guard.

#### THE GREEN MONKEY

Has a black and flatish face, the cheeks bounded by long white hairs, falling backwards, and almost covering the ears, which are black, and like the human; head, limbs, and whole upper part of the body and tail covered with soft hair, of a yellowish green colour at their ends, cinereous at their roots; under side of the body and tail, and inner side of the limbs, of a silvery colour: tail very long and slender; size of a small cat.

They inhabit different parts of Africa; keep in great flocks, and live in the woods; are scarce discernible when among the leaves, except by their breaking the boughs with their gambols, in which they are very agile and silent; even when shot at, they do not make the least noise, but will unite in company, knit their brows, and gnash their teeth, as if they meant to attack the enemy; and are very common in the Cape de Verd islands.

The SILKY MONKEY is by some called the lion-ape, from the quantity of hair which surrounds its face, falling backwards like a mane.

Its face is flat, and of a dull purple colour; the hair round the face is of a bright bay, inclining to red; its hands and feet are without hair, and of the same colour as the face; its body is ten inches long, and its tail is thirteen.

This creature is a native of Guinea, very gentle and lively, and seems to be more hardy than the rest of its species; one of them has been known to live at Paris several years, with no other precaution than keeping it in a warm room during winter.



The **MUSTACHE** is another beautiful little animal of the same clime.

It has a turf of yellow hair on each cheek, and another on the top of its head, which is long and upright ; its face is of a blueish colour ; its body of a greenish ash, and the breast and belly lighter. It is only one foot in length, while the tail measures eighteen inches.

#### THE COMMON MONKEY.

The varieties of the larger tribes of the monkey kind are but few ; but the differences among the smaller classes are too tedious for enumeration. There is scarcely a country in the tropical climates that does not swarm with them, and scarcely a forest that is not inhabited by a race of monkeys distinct from all others. Monkeys of all kinds, being smaller than the baboon, are endued with less powers of doing mischief. Indeed, the ferocity of their nature seems to diminish with their size ; and when taken wild in the woods, they are sooner tamed, and more easily taught to imitate man than the former ; but it must be confessed, that if not kept under by the influence of fear, they are the most insolent and head-strong animals in nature.

These animals, according to the most respectable accounts, are in possession of every forest where they reside, and may be considered as masters of the place. Neither the tiger, nor the lion himself, will venture to dispute the dominion ; nor can the birds escape their continual depredations ; for as these harmless inhabitants of the woods usually build upon trees, the monkeys are constantly on the watch to rob their nests. There is, therefore, but one animal that ventures to oppose this mischievous race, and that is the serpent. The larger snakes are often seen winding up the trees where the monkeys reside, and when they happen to surprise them sleeping, swallow them whole, before they have time to make a defence. In this manner, the forest is generally divided between them ; and those sylvan scenes which nature seems to have embellished with peculiar grandeur, chiefly serve as retreats for mischief and malignity.

The common monkey is a native of Barbary, and other

northern parts of Africa, Arabia, and Persia, where it is called the monk.

Its nose is short and thick ; its face of a dark lead colour ; the beard on each side is long, and of a greenish yellow ; the top of the head is bright yellow, freckled with black ; the back and sides, deep brown, with black freckles ; the legs, feet, and tail, black ; the inside of the thighs, of a pale-blue colour, thinly covered with whitish hairs ; and on each side of the rump, close by the tail, is a large white spot.

#### THE GREAT-EARED MONKEY

Is about the size of a squirrel ; its face is naked, of a swarthy flesh colour ; its upper lip is somewhat divided ; its ears are very large and erect ; its hair is soft, shaggy, and of a black colour ; its hands and feet are covered with orange coloured hair, very fine and smooth ; its nails are long and crooked ; and its tail black, and twice the length of its body.

It inhabits the hottest parts of South America ; is a lively, pleasant animal ; easily tamed ; but so delicate that it cannot bear a removal to a less temperate climate.

#### THE RING-TAILED MONKEY

Is the largest of all the American monkeys, being about the size of a large fox. Its body is covered with long smooth hair, of a shining black colour, forming a kind of ruff round the animal's neck ; its tail is long, and always twisted at the end.

These monkeys are very fierce, and so wild and mischievous, that they can neither be conquered nor tamed. They feed on fruit, grain, herbs, and sometimes insects ; live in trees, and leap from bough to bough with wonderful agility, catching hold with their hands and tails as they throw themselves from one branch to another, and maintain themselves so firmly, that, even when shot, they remain fixed to the trees where they die.

There is another animal of the above kind, called the Douc, differing from other monkeys, in having no callosities on its buttocks, which are entirely covered with hair ; it is also much larger, being four feet high when erect. Its face is short, rather flat, and furnished on each side with long hairs of a pale yellow colour ; its body is beautifully variegated with different coloured hair ; round the neck there is a collar of a blueish purple-colour ; the top of the head and body is grey ; breast and belly, yellow ; arms, white below, and black above ; tail white ; feet black ; face and ears, red ; lips black ; and round each eye there is a black ring.



It is found in Cochin-China, and in the island of Madagascar, where it is called the *sifac*.

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Innumerable examples are related by various authors, of the extraordinary feats of domesticated Monkeys. Condamine and Bouger saw, in Peru, two of these animals, which had been admitted into the apartments of the Academicians, during the time they were employed in making observations in the mountains. They greatly excited the astonishment of the Academicians, by afterwards spontaneously going through a series of imitations. They planted the signals, ran to the pendulum, and then immediately to the table, as if for the purpose of recording the observations they had made. They occasionally pointed the telescopes towards the heavens, as if to view the planets or stars, and performed several other similar feats.

A curious anecdote is related in ancient history, of the troops of Alexander the Great being once surprised on their march by a band of these animals, whom they mistook for an unexpected enemy. The whole Macedonian army was drawn up in battle array, but the cause of their alarm was soon found to be a tribe of harmless monkeys.

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## THE LEMUR TRIBE.

### THE BENGAL LORIS, OR SLOW LEMUR,

Is about the size of a small cat, and of pale-brown, or mouse colour; the face is flatish, and the nose is somewhat sharp. The eyes are prominent, and are surrounded with a dark brown circle, and a stripe of the same colour runs along the middle of the back.

Sir William Jones, in the fourth volume of the Asiatic Researches, gives an interesting account of one of these little creatures :

“ In his manners he was for the most part gentle, except in the cold season, when his temper seemed wholly changed; and his Creator, who made him so sensible of cold, to which he must often have been exposed even in his native forests, gave him, probably for that reason, his thick fur; which we rarely see on animals in these tropical climates. To me, who not only constantly fed him, but bathed him twice a week in water accommodated to the seasons, and whom he clearly distinguished from others, he was at all

times grateful; but when I disturbed him in winter he was usually indignant, and seemed to reproach me with the uneasiness which he felt, though no possible precautions had been omitted to keep him in a proper degree of warmth. At all times he was pleased with being stroked on the head and throat, and he frequently suffered me to touch his extremely sharp teeth: but his temper was always quick; and when he was unseasonably disturbed, he expressed a little resentment, by an obscure murmur, like that of a squirrel; or a greater degree of displeasure by a peevish cry, especially in winter, when he was often as fierce on being much importuned, as any beast of the woods.

“ From half an hour after sun-rise to half an hour before sun-set, he slept without intermission, rolled up like a hedgehog; and, as soon as he awoke, he began to prepare himself for the labours of *his* approaching day, licking and dressing himself like a cat; an operation which the flexibility of his neck and limbs enabled him to perform very completely: he was then ready for a slight breakfast, after which he commonly took a short nap; but when the sun was quite set, he recovered all his vivacity.

“ His ordinary food was the sweet fruit of this country; plantains always, and mangoes during the season; but he refused peaches, and was not fond of mulberries, or even of guaiavas: milk he lapped eagerly, but was content with plain water. In general he was not voracious, but he never appeared satisfied with grasshoppers; and passed the whole night, while the hot season lasted, in prowling for them. When a grasshopper, or any insect, alighted within his reach, his eyes, which he fixed on his prey, glowed with uncommon fire: and, having drawn himself back to spring on it with greater force, he seized the prey with both his forepaws, but held it in one of them while he devoured it. For other purposes, and sometimes even for that of holding his food, he used all his paws indifferently as hands, and frequently grasped with one of them the higher part of his ample cage, while his three others were severally engaged at the bottom of it; but the posture of which he seemed fondest was to cling with all four of them to the wires, his body being inverted. In the evening he usually stood erect for many minutes, playing on the wires with his fingers, and rapidly moving his body from side to side, as if he had found the utility of exercise in his unnatural state of confinement.

“ A little before day-break, when my early hours gave me frequent opportunities of observing him, he seemed to solicit my attention; and if I presented my finger to him, he licked or nibbled it with great gentleness, but eagerly took fruit when I offered it; though he seldom ate much at his morning repast: when the *day*



*brought back his night*, his eyes lost their lustre and strength, and he composed himself for a slumber of ten or eleven hours.

“ My little friend was, on the whole, very engaging ; and when he was found lifeless, in the same posture in which he would naturally have slept, I consoled myself with believing that he died without much pain, and lived with as much pleasure as he could have enjoyed in a state of captivity.”

#### THE MACAUCO, OR RING-TAILED LEMUR

Was brought into Europe from Madagascar, and other Eastern islands.

It is about the size of a small cat, and is long and slender. The muzzle is pointed, and the ears are oval. The forehead is white ; the back, and the outsides of the legs, are of a brownish grey colour ; and the throat, breast, and insides of the legs are whitish. The tail, which is very long and thickly covered with hair, is marked with alternate black and white rings.

One of these animals (says Mr. Bingley), which was kept in the Museum of Natural History at Paris, had been in Europe more than nineteen years ; and from the great age which this animal attained, it is natural to conclude that the temperature of an European climate was suited to its habits. Such, however, does not seem to have been precisely the case. He appeared to suffer much from the cold, frequently rolling himself into a ball, and covering his back and head with his long and bushy tail. During the winter, he was always kept in a room that had a fire in it ; and, frequently, for a long time together, would sit before the fire, stretching out his little arms towards the flame to warm himself. Whenever he sat in the sun, he adopted the same attitude. He was so partial to heat, that he often even burnt his whiskers and face, before he would remove to a greater distance. When the heat incommoded him, he would turn the sides of his head, alternately, to the fire, in order to alleviate the pain thereby occasioned.

#### THE MONGUS, OR WOOLLY MACAUCO

Inhabits Madagascar, and the islands eastward as far as Celebes.

It is the size of a cat, and has the whole upper part of the body covered with long, soft, and thick fur, a little curled or waved, of a deep brownish ash-colour : the tail is very long, covered with the









same sort of hair, and of the same colour. It lives on fruits, turns its tail over its head to protect it from rain, and sleeps on trees; it is very sportive, good-natured, and tender.

Buffon possessed one of these animals for several years. He was at first allowed to run about the house, but at length it became necessary to chain him up. When he escaped he usually visited the shops in the neighbourhood, and levied contributions on the stock of fruit, sugar, and confectionary. He died of cold in 1750, notwithstanding every precaution had been taken to keep him warm.

#### THE BAT TRIBE.

THE COMMON BAT. (*See Vol. 3, p. 116.*)

THE VAMPYRE BAT. (*See Vol. 3, p. 119.*)

#### THE SLOTH TRIBE.

##### THE SLOTH.

The appearance of this animal is so helpless as to excite compassion. It has three claws upon each foot, and a short tail. Its fur is long and coarse, resembling dried grass; the mouth extremely wide; the eyes dull and heavy; and the legs and feet set on so awkwardly, that a few paces often require the effort of a week. The legs indeed proceed from the body in such an oblique direction, that the sole of the foot seldom touches the ground. When, therefore, the animal is compelled to make a step forward, it scrapes on the back of the nails against the surface, and wheeling the limb circularly about, yet still touching the ground, it at length places its foot in a progressive position; the other three limbs are brought about with the same difficulty, and thus seldom moves above three feet in an hour. In fact, it seldom attempts to change its place but by constraint, or when impelled by the severest stings of hunger. It is about the size of a cat, very ugly, and has claws extended like fingers.

The sloth subsists entirely upon vegetable food, and, as it requires a considerable share of provision, it generally strips a tree of all its verdure in less than a fortnight. It then falls to devouring the bark, and thus in a short time, destroys the very source of its support. When this is the case, being unable to descend, it is obliged to drop from the branches to the ground; and after remaining some time torpid, from the violence of its fall, it prepares for a tedious, dangerous, and painful migration to some neighbouring tree, which it ascends by two days exertion,



and soon kills it like the former. Its power of abstinence is very remarkable, and the strength of its feet so great, that whatever it seizes on cannot possibly be freed from its claws.

Sloths suspend themselves by their claws from the branches of trees, and, thus hanging, a branch may be cut off, and they will fall with it rather than quit their hold. A sloth that was taken on board a ship, and put down at the lower part of the mizen shrouds, climbed to the mast head; but occupied two hours in what a monkey would have performed in half a minute. It proceeded very slowly and deliberately, as if all its movements had been directed by machinery.

When kept in a house the sloth never rests on the ground, but always climbs upon some post or door to repose. If a pole be held out to one of these animals when on the ground, it will immediately lay hold of it; and, if this be afterwards fixed upright, will climb to the top, and there adhere.

#### THE TWO-TOED SLOTH

Differs from the preceding animal in having only two claws upon the fore feet; the snout also is longer, the fur very different, and the ribs more numerous; this having forty-six, while the other has but twenty-eight. Both, however, resemble each other in the general outlines of their figure, and their helpless and awkward formation. Their appetites and habitudes are also precisely the same.

Buffon purchased one of these animals at Amsterdam. It had been fed with sea biscuit, but he was told, that, as soon as the winter was over, and the verdure began to appear, it would require nothing but leaves. The creature was consequently supplied with leaves, which he ate freely while they were green and tender; but when dry or shrivelled, he refused them. During the time Buffon had him, his ordinary food was bread, apples, roots, &c.

#### THE GREAT ANT-EATER.

The largest ant-eater is nearly four feet in length, exclusive of its tail, which is two and a half, and serves to cover the body when it rains. It is remarkable for its long snout, which is cylindrical, and serves as a sheath to its long and slender tongue, which always lies folded double in its mouth, and is the chief instrument by which it finds its subsistence.





*The Ant-Eater.*





This creature is a native of Brazil and Guiana, runs slowly, and frequently swims over rivers ; it lives wholly on ants, which it collects by thrusting its tongue into their holes, and having penetrated every part of a nest, withdraws it into its mouth loaded with prey. Its legs are so strong, that few animals can extricate themselves from its gripe. It is formidable even to the panthers of America ; and sometimes so fixes itself upon them, that both fall and perish together ; for its obstinacy is so great, that it will not quit its adversary even after he is dead. The flesh has a strong disagreeable taste, but is eaten by the Indians.

#### THE PANGOLIN, OR MANIS.

This singular animal is defended by a coat of mail, which protects it from the attacks of the most powerful enemies, opposing to the adversary a formidable row of offensive weapons, erected like quills of the porcupine. The tiger, the panther, or the leopard, in vain attempt to force it. The moment it perceives the approach of an enemy, it rolls itself up like a hedge-hog, and so secures all the weaker parts of its body. Its long tail, which, at first view, might be thought easily separable, serves still more to increase its security, for being lapped round the body, and defended with shells even more cutting than any other part, the creature remains in perfect security.

Incapable of being carnivorous, since it has no teeth, or of subsisting on vegetables which require much chewing, the pangolin lives entirely upon insects ; for which Nature has fitted it in a very remarkable manner. As it has a long nose, it may naturally be supposed to have a long tongue ; but to increase its length still more, it is doubled in the mouth, so that when shot out, it extends above a quarter of a yard beyond the tip of the nose. When, therefore, the pangolin approaches an ant-hill (for on which insects it chiefly feeds) it lies down near it, concealing as much as possible the place of its retreat, and stretches out its long tongue among the ants, keeping it for some time immoveable. These little creatures, allured by its shining appearance, and the unctuous substance with which it is smeared, instantly gather upon it in great numbers ; and when the pangolin supposes there



is a sufficiency, it quickly withdraws the tongue, and swallows them at once.

#### THE ARMADILLO

Has neither fore nor dog teeth; it is covered with a crustaceous armour, intersected with distinct moveable zones or belts, covering the head, neck, back, flanks, and extending even to the extremity of the tail; but the throat, breast, and belly, are covered with a whitish coarse skin, resembling that of a hen after the feathers are pulled off. The shell does not consist of one entire piece, like that of the tortoise; but is divided into separate belts, connected to each other by membranes which enable the animal to move it, and even to roll itself up like a hedge-hog.

All the species of this animal were originally natives of America, entirely unknown to the ancients; and modern travellers mention them as peculiar to Mexico, Brazil, and the southern parts of America; though some confound them with the pangolin or manis found in the East Indies; others report that they are natives of Africa, because some of them have been transported from Brazil to the coast of Guinea, where a few have since been propagated. They are all endowed with the faculty of extending and contracting their bodies, and of rolling themselves up like a ball, but not in so complete a sphere as the hedge-hog. They are very inoffensive animals, excepting when they get into gardens, where they devour melons, potatoes, and other roots.

These animals are hunted with small dogs, which are trained by the barbarous Indians for this purpose. The hunters know when they are concealed in their holes, by a swarm of flies hovering round; and the usual mode of forcing them out is by smoking the burrows, or pouring in water. If they begin to dig, the animal digs also; and, by throwing the earth behind it, so effectually closes up the hole, that the smoke cannot penetrate.

#### THE RHINOCEROS

Is generally found about twelve feet long, and from five to seven feet high, and the circumference of its body is nearly equal to its length. It is difficult to convey an accurate idea of this animal's shape, without referring to the Engraving, and yet there are few so remarkably formed. Its head is furnished with a hard and solid horn, projecting from the snout several inches in length; that part resembles the head of a hog; the upper lip, however, is much longer in proportion, and very pliable, serving to collect its food,

and deliver it into the mouth: the ears are large, erect, and pointed, and the eyes small and piercing. The skin is naked, rough, and so extremely thick and hard, as to turn the edge of a scimitar, or to resist a leaden ball; it is of a dirty brown colour, and lies upon the body in folds, after a very peculiar manner. The belly hangs low; the legs are short, strong, and thick; and the hoofs are divided into three parts, each pointing forward.

The rhinoceros which came to London in the year 1739 was sent from Bengal. He was of a peaceable disposition, and allowed all parts of his body to be touched. When hungry, or struck by any person, he became mischievous, and in both cases was appeased only by food. When enraged, he sprung forward, and nimbly raised himself to a great height, pushing at the same time his head furiously against the walls, which he performed with amazing quickness, notwithstanding his heavy aspect and unwieldy mass. The vivacity and promptitude of his movements led an opinion that he is altogether unconquerable, and that he could easily overtake any man who should offend him.

At the age of two years it was not taller than a heifer; but his body was very long and thick, and his head disproportionally large. From the ears to the horn is a concavity, whose two extremities, the upper end of the muzzle, and the part near the ears, were considerably raised. The horn, not then above an inch high, was black, smooth at the top, but full of wrinkles directed backward at the base. The nostrils were very low, about an inch from the opening of the mouth. The tongue was soft, like that of a calf. His eyes had no vivacity; in figure they resembled those of the hog, and were situated nearer the nostrils than in any other quadruped. His ears were large, thin at the extremities, and contracted at their origin by a kind of annular rugosity. The neck was short, and surrounded with two large folds of skin. The shoulders were thick, and at their juncture another fold of skin descended upon the fore legs. The body was very thick, and much resembled that of a cow about to bring forth. Between the body and crupper another fold descended upon the hind legs, and another fold transversely surrounded the inferior part of the crupper, at some distance from the tail.

In the year 1790 a rhinoceros was brought in the Melville Castle East Indiaman, and not long afterwards he was purchased by Mr. Pidcock, of Exeter 'Change, for the sum of 700*l*. This animal exhibited no symptoms of a ferocious propensity, and would even al-



low himself to be patted on the back and sides by strangers. His docility was about equal to that of a tolerably tractable pig; he would obey the orders of his keeper, to walk about the room, and exhibit himself to the numerous spectators who came to visit him. He usually ate, every day, twenty-eight pounds weight of clover, besides about the same weight of ship biscuit, and a great quantity of greens. This food was invariably seized in his long and projecting upper lip, and by it was conveyed into his mouth. He was allowed also five pails of water twice or thrice a day; and he was fond of sweet wines, of which he would often drink three or four bottles in the course of a few hours. His voice was not much unlike the bleating of a calf. This was usually exerted when he observed any person with fruit or other favourite food in his hand; and in such cases, it seems to have been a mark of his anxiety to have food given him. In October 1792, he dislocated the joint of his right fore-leg. This accident brought on an inflammation, which, about nine months afterwards, occasioned his death, but in the first attempts that were made to recover the animal, the incisions which were formed through his thick and tough hide, were invariably found to be healed in the course of twenty-four hours.

These animals never assemble or march together in troops like elephants. Being more solitary and savage, they are more difficult to hunt and overcome. They never attack men, except when provoked, but then they are very furious and formidable; yet as they see only before them, and not very quick, and as they turn with great difficulty, they may be easily avoided. Their skin is so extremely hard as to resist sabres, lances, javelins, and even musket balls, the only penetrable parts being the belly, the eyes, and about the ears, and hence the hunters generally attack them when they lie down to sleep. Their flesh is considered as excellent by the Indians and Africans, but especially by the Hottentots; and if they were trained when young, they might be rendered domestic, in which case they would multiply more easily than the elephant. They inhabit various parts of Asia and Africa, and frequent the banks of rivers and marshy places. The horn of this quadruped is a formidable

weapon, growing from the solid bone, and capable of inflicting the most fatal wounds. The elephant, the bear, and the buffalo, are obliged to strike transversely with their weapons ; but the rhinoceros employs all his force with every blow ; so that the tiger will more willingly attack any other animal of the forest, than one whose strength is so justly employed.

#### THE DOUBLE-HORNED RHINOCEROS

Differs from the preceding animal in the appearance of its skin ; which, instead of large and regularly-marked folds, resembling armour, has merely a slight wrinkle across the shoulders and on the hinder parts, with a few fainter wrinkles on the sides ; so that, when compared with the common rhinoceros, it appears almost smooth. The principal distinction, however, consists in the nose being furnished with two horns, one of which is smaller than the other, and situated above it.

Bruce informs us, that besides the trees that are capable of most resistance, there are, in the vast forests within the rains, trees of a softer consistence, and of succulent quality, which seem to be destined for the principal food of the double-horned rhinoceros. For the purpose of gaining the highest branches of these, his upper lip is capable of being lengthened out so as to increase his power of laying hold with it, in the same manner as the elephant does with his trunk. With this lip, and the assistance of his tongue, he pulls down the upper branches, which have most leaves, and these he devours first.— Having stripped the tree of its branches, he does not immediately abandon it ; but, placing his snout as low in the trunk as he finds his horn will enter, he rips up the body of the tree, and reduces it to thin pieces like so many laths ; and, when he has thus prepared it, he embraces as much of it as possible in his monstrous jaws, and twists it round with as much ease as an ox would do a root of celery, or any small plant.

When pursued, and in fear, he moves with astonishing swiftness, considering his size, the apparent unwieldiness of his body, his great weight before, and the shortness of his legs. It is not, however, true that, in a plain, his pace is more rapid than that of a horse ; for Mr. Bruce has often passed these animals with ease, and seen other persons worse mounted than himself, do the same ; but by his cunning he is often able to elude pursuit. He



makes constantly from wood to wood, and forces himself into the thickest parts of the forests. The trees that are dead or dry, are broken down, as if with a cannon shot, and fall behind and on each side of him, in all directions. Others that are more pliable, greener, or fuller of sap, are bent back by his weight, and by the velocity of his motions. And, after he has passed, they restore themselves, like a green branch, to their natural position, and often sweep the incautious pursuer and his horse from the ground, and dash them in pieces against the surrounding trees.

“ We were on horseback (says Mr. Bruce) by dawn of day, in search of the rhinoceros, many of which we had heard making a very deep groan and cry as the morning approached. Several of the Agageers, or hunters, then joined us ; and after we had searched about an hour in the very thickest part of the wood, a rhinoceros rushed out with great violence, and crossed the plain towards a wood of canes that was about two miles distant. But though he ran, or rather trotted, with surprising speed, considering his bulk, he was, in a short time, transfixed with thirty or forty javelins. This attack so confounded him, that he left his purpose of going to the wood, and ran into a deep hole, or ravine, without outlet, breaking above a dozen of the javelins as he entered. Here we thought he was caught as in a trap, for he had scarcely room to turn ; and a servant, who had a gun, standing directly over him, fired at his head, and the animal fell immediately, to all appearance dead. All those on foot now jumped in with their knives to cut him up ; but they had scarcely begun, when the animal recovered so far as to rise upon his knees : happy then was the man that escaped first ; and had not one of the Agageers, who was himself engaged in the ravine, cut the sinew of the hind leg as he was retreating, there would have been a very sorrowful account of the foot-hunters that day.”—*Travels in Abyssinia.*





W. Read, Sculp.

*The Rhinoceros*





## LECTURE LVI.

## THE ELEPHANT.

THE superiority of the elephant over other animals, is partly founded in the actual advantages that it has beyond them. The perfection of its organ of touch; the facility it possesses of confirming the organ of sight; the delicacy of its organs of hearing and smelling; the length of its life, and the experience and habits it derives from this; its strength and power, which prevents it from being attacked by any other animals, procure for it an uninterrupted repose, and constant security. Yet its external organs, (in every respect so advantageous to the animal) are not animated by a nervous system either more powerful or more delicate than that of other quadrupeds. Its brain is small in proportion to the bulk of its body: but the cells before mentioned render the skull of large size, and make it appear almost as prominent as that of man. The result of this conformation of the skull is a grave and serious physiognomy, which probably has contributed, in no slight degree, to produce for the elephant that reputation for reason and intellect which have rendered it so celebrated.

At first view it presents the spectator with an enormous mass of flesh, which seems scarcely animated. Its huge body, covered with a callous hide, without hair; its large mis-shapen legs, that seem scarcely formed for motion; its little eyes, pendulous ears, and long trunk, all concur to give it an air of stupidity. But our prejudice subsides on examining the various advantages it derives from so clumsy a formation.

The eyes of this animal are very small, when compared with the enormous bulk of the body; but though their minuteness may at first appear deformed, on a more careful examination they are seen to exhibit a variety of expression, and to discover the various sensations by which they are moved.



The elephant is not less remarkable for the excellence of its hearing. Its ears are extremely large, and usually pendent; but can be raised and moved with perfect facility, and serve to wipe the animal's eyes, as well as to protect them from flies, dust, and other annoyances. It appears delighted with music, and readily learns to move in measure, and even to join its voice to the sound of the drum or trumpet.

This quadruped's sense of smelling is not only exquisite, but it is, in a great measure, pleased with the same odours that delight mankind. The elephant gathers flowers with great pleasure and attention, unites them into a nosegay, and seems charmed with their perfume.

The enormous tusks of this animal, being unserviceable for chewing, may be considered only as weapons of defence. They are two in number, proceeding from the upper jaw, of a yellowish colour, and extremely hard; and become so extremely heavy as the animal grows old, that it is sometimes obliged to make holes in the sides of its stall, to rest them in, and ease itself of the fatigue of their support.

The elephant is peculiarly distinguished from all other quadrupeds by its *proboscis*, a wonderful instrument, which gives to the animal an address, and a nicety of touch superior to that even of the asses, and which is particularly advantageous from the circumstance of its being situated so near the organ of smell; since the animal can examine objects at the same time by both these senses, and seize or reject them according to the judgment formed from this double examination.

As the head of the elephant is very heavy, and its long and solid tusks, projecting forward, contribute to remove the centre of gravity from its point of support, it could never have been able to elevate this head, if the neck had been at all proportioned to the length of the legs. On the other hand, with a short neck, and long legs, the animal would not have been able to procure either the food or liquid necessary to its support, had it not been furnished with a proboscis; which consequently is a member indispensable to its existence. This proboscis is formed by a membranaceous prolongation of the tubes of the nostrils, furnished with muscles, and clad, externally, with a strong and flexible skin. The muscles which move it are of two sorts: longitudinal ones, divided into a number of arcs, the convex parts of which are outward, and the two extremities of which adhere to the internal membrane; and transverse ones, which extend from the internal to the external membranes, like the rays of a circle. These last contract the external envelope, without closing the internal canal, which the other muscles would not be able to do: in this action they elongate

the proboscis by forcing the longitudinal muscles to extend themselves. The latter, in contracting, shorten the proboscis, either entirely, when they all act together, or in part, and this on one or more sides, and in one or more portions of its length, which produces all imaginable curvatures. The proboscis is therefore a mechanism at the same time the most simple and the most powerful that can be imagined. At its extremity, there is an appendix in form of a finger, which the animal uses chiefly to take hold of very small objects. This proboscis is so strong, that with it the elephant can tear up even small trees, can shake buildings, fling considerable weights, and with great ease suffocate a man by folding it round his body.

Besides the above singularities of organization, the elephants have several others that are well deserving of notice. Their legs are high and peculiarly strong. The whole sole of the foot is applied to the ground, and is so short in proportion to the animal, that the leg appears to be cut off below, almost like the base of a column. The ears are broad and pendant, very different from those of animals which, from domestication, have pendant ears, such as the dogs; in the latter, the upper part of the valve falls down and covers even the opening of the *meatus auditorius*; but in the elephants, the ear is widened and pendant by the posterior and inferior part. When the animals are in a wild state, their ears are continually in motion, and are of essential service in defending the eyes from the attacks of noxious insects.

The skin of the elephant is rough and uneven, or wrinkled in all directions, and granulated almost like shagreen. There is very little hair: in the full grown animals, this is observed only on some particular parts of their body; but in the young ones, it is thinly scattered over the whole surface. The skin when washed is generally black, more or less deep, but the real colour is almost always concealed by a coat of dirt and scurf which covers it.

The general resemblance betwixt all the elephants, and the difficulty of comparing those of different climates, have, of late years, been the cause of confounding different species under the same name, *the Great Elephant*. It is, however, now well ascertained that there are, at least, two species which are perfectly distinct; that found along the west, and the southern coast of Africa, and that which is so common in the East Indies. These animals not only differ in the general form of their body, but also very considerably in their habits and instincts.

The Indian elephant has its head elongated, the forehead flat, or even, somewhat concave; whilst the African elephant has a round head, and a convex forehead. The ears of the former are of a moderate size, whilst those of the latter are so enormous, that they



cover the whole shoulder. But what forms a more decisive character is, that the molar teeth of the African elephant when the upper surface is worn away by mastication, exhibit a lozenge formed surface to each of the partial teeth, whilst the surfaces of these teeth, in the other species, are each somewhat in the form of a waved or festooned ribbon. The tusks of the African elephants continue to increase in size during the greater part of their life, and arrive at a much larger size than those of the Indian animals: they are nearly equal in both the sexes; whilst the tusks of the females of India seldom exceed some inches in length. The African ivory is likewise harder, and less liable to become yellow, than that from the East Indies; and almost all the ivory brought into Europe is from Africa. It likewise appears that these elephants differ in the number of their nails: but this is a character which cannot be depended on, since the number of these is not always constant in the same species.

The Malays give to the elephant the same name that they give to man, and which implies a rational being. The ancients were not contented merely to acknowledge its gentleness, the facility with which it was domesticated, its attachment to its master, its sense of benefits conferred, its resentment of injury, qualities which it possesses in a very high degree, but still, in common with the dog and several other quadrupeds, they elevated it to a much higher rank, considered it as an intellectual being, as in some measure capable of religious worship, as possessing virtues very rare among mankind, an unalterable conjugal fidelity, and an uniform resistance against being the minister of injustice. The Indians believe that they can make the elephants comprehend whatever they say to them; and that they are influenced by passions similar to those which actuate mankind, such as a love of finery, and even of simple commendation or praise. Travellers, delighted to speak of an animal so wonderful as the elephant undoubtedly is, have adopted much too readily the surprising narrations respecting it of these ignorant people, and naturalists have, in their turn, been too eager and credulous in copying the accounts of the travellers. It is certain that the elephant, as remarked by the most sagacious observers, falls far short of the station in which it has usually been placed by the accounts of those who considered it possessed of intellectual faculties.

This animal, notwithstanding its enormous bulk, does

not by any means want quickness in its movements. It trots with considerable agility, and can easily overtake a man at his greatest speed ; but as it cannot turn very readily, he is able at any time to escape from it by running to one side. The hunters are able to kill it by attacking it from behind, or on the flanks. It moves its ears as it runs, and sometimes employs them to direct its motions, extending the ear on that side to which it would turn, and presenting thereby a greater resistance to the air. It has great difficulty in descending very steep places, and in this act it is obliged to bend considerably its hind legs, since otherwise it would be overbalanced by the enormous weight of its head and tusks.

The body of the elephant being lighter than water, the animal is able, with great ease, to cross rivers by swimming, particularly where the current is not violent. It has thus no need, as the ancients asserted, to walk along the bottom, and elevate its trunk above the surface, in order to respire.

This animal prefers moist and shady situations, in the neighbourhood of rivers, to all other places. It suffers nearly as much from excessive heat, as it does from cold. A continual humidity is necessary, to soften his hard and wrinkled skin, which otherwise is subject to crack and excoriate. The elephant, therefore, not only throws the water over its body by means of its trunk, but likewise experiences great delight in plunging into the waters, and sporting amongst them ; when no water is at hand, it endeavours to supply the place of this by covering its body with dust or herbs.

Its usual food consists of plants, roots, and the young branches of trees. It is particularly fond of the seeds of the bamboo and plantain, of the banana fruit, and sugar canes, which it devours with great avidity. The inhabitants of Sumatra have learned how to profit by the voracity of the elephants for sugar canes. They insert a very active poison into the hollows of the canes nearest to the quarter from whence the elephants usually come ; and after the animals have eaten them, they generally fall down on the spot and die.

The natural instincts of the elephants induce them to live in society : they consequently are observed in in-



mense numbers in the interior of the forests : these they seldom leave, except for the purpose of devastating the neighbouring plantations. Their troops or herds consist of from forty to a hundred individuals of both sexes and all ages. They are conducted by one of the oldest females, and one of the largest males. When they leave the forests, if there is any appearance of danger, they observe a determined order of progress. The young ones and the females are placed in the middle, surrounded by the old males ; and each of the females protects her own offspring by embracing it with her trunk.

Some elephants live in solitude, and entirely apart from society : these are called by the Indians *grondahs*. They are always males, which, it is believed, have been chased from the herds, by the jealousy of other individuals of their sex. They are, in general, excessively ferocious : they often leave the forests, attack mankind without the least provocation, lay waste the fields, throw down the huts of the peasants, and destroy the cattle. The farmers are frequently compelled to set guards against them, who are posted, for the purpose, in a kind of sentry-boxes, of great strength, formed of bamboo. When the men perceive one of these elephants approaching, they give the alarm to each other, and drive away the animal by making a great noise, and by firing at it with muskets. When these elephants penetrate into the villages, they commit the most dreadful desolation. The animals that live in troops are not dangerous, unless they are irritated : a man may pass very near them without in the least degree attracting their notice.

The young one, when first produced, is about three feet in height. It sucks with its mouth, and certainly not by means of its trunk, as has been generally believed. In the troops, the young are said to suck, indiscriminately, all the females that have milk in their teats. It has likewise been remarked, that if a young elephant be carried off from its mother, and kept apart from her for only two days, it will not again be able to recognize her, although it seeks for her, and calls eagerly for the teat by its cries. The young elephant sucks for two years, and in the first year, it attains the height of about four feet, in the second four and a half, and in the third five It

continues to increase in size till it is twenty or twenty-two years old.

Indian elephants are in general smaller than has usually been asserted: the females being only from seven to eight feet high, and the males from eight to ten or twelve.

Elephants first produce young ones at the age of seven or eight years, or somewhat earlier. The greatest age that these animals attain has not yet been ascertained with any degree of exactness. They have, however, been kept in a state of domestication for about a hundred and twenty or a hundred and thirty years; and, from the slowness of their growth, it is not improbable that, in a wild state, they may not live a couple of centuries.

In India they are taken in two ways, in troops or singly: a whole troop is sometimes caught by surrounding them with a great number of armed men, arranged in two circles, who frighten the animals by shouting, beating a kind of drum called tomtoms, and firing with muskets loaded with powder. By these means they are driven into an inclosure, surrounded by deep ditches, and by palisadoes of suitable strength. The entrance to this inclosure is planted with trees and shrubs, so as to resemble the pathway into a forest. The gate is then closed, fires are lighted, and the same noises are made as before, till the animals have passed through into the interior inclosure. Nourishment is now offered to them, from a scaffold placed near the entrance of a long passage into which they are drawn, one by one, and which is so narrow, that they are not able to turn round. As soon as one of them has entered this passage, the place is closed by a gate, and the animal is now confined to the spot by bars that are passed across both before and behind it, and its feet are secured by ropes, interlaced by a man who approaches from behind. Other men on the scaffold pass strong cords round its head and body, the ends of which are made fast to two domesticated females, properly instructed for the purpose; and it soon becomes perfectly tame and familiar.

It is not necessary to make the above preparation for the taking of single elephants; since, as they are always males which have been driven away from their herds, they are attracted into a snare, without much difficulty, by



tame and well trained females. Men pass between the legs of these females, in order to approach and tie with ropes the legs of the wild animal. If any accident happens to rouse the animal, they mount, as quickly as possible, on the backs of the females, by means of rope ladders, fastened to them for that purpose, and escape. But they are generally able to tie the elephant, and afterwards fasten him to the trunk of some stout tree to which the females have attracted him.

This animal is one of the most useful that has been reduced into the service of mankind. Its strength is so great that it is able to carry a weight of nearly two thousand pounds. It will draw a burthen which six horses are scarcely able to move; and it will travel, without fatigue, fifteen or twenty leagues in a day, and, on an emergency, it may be urged to more than thirty. To these advantages are to be added all those which are the result of its sagacity; as its retracing by itself a road along which it has travelled; the surprising resources that it adopts in its embarrassments; and those derived from its general quickness and address, and from the peculiarly excellent formation of the proboscis. Every one knows that formerly it was employed in war, that it charged the soldiers, and, in Eastern countries, had generally an important place assigned to it in battle: but the adoption of fire arms in late centuries, and its natural and unconquerable dread of fire, prevent it from being at present of much further use than in transporting provisions, baggage, and artillery.\*

A tame elephant will do more labour than six horses; but then he requires a proportional quantity of food.

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\* The Grecians who first saw this great animal were Alexander and the Macedonians, when fighting with Porus. The observations that were made about this time must have been exceedingly good, since Aristotle has given a very complete history of the animal, and much more correct than what even many of the moderns have written. After the death of Alexander, Antigonus, one of his generals, procured and kept several elephants. Pyrrhus was the first who carried an elephant into Italy, in the year of Rome 472, and as it was landed at Tarentum, the Romans gave to these animals, which till then were unknown to them, the name of Lucanian oxen. Carius Dentatus, who borrowed four elephants of Pyrrhus, carried them to Rome to increase the magnificence of his triumphal entry. After

They are the principal beasts of burden in many parts of Africa and the East Indies. They carry sacks and bundles of all kinds on their neck, back, and tusks. They never lose or damage any thing committed to their care : they will stand on the edge of a river, take bundles off their necks and tusks, lay them carefully in a boat wherever they are desired, and try with their trunk whether they are properly situated ; if they be loaded with casks, they go in quest of stones to prop them and prevent them from rolling

In a state of domestication, the elephant requires for its support about a hundred pounds weight of rice per day, and a considerable portion of fresh vegetables or fruit. A male elephant that was brought to England in the year 1793, and purchased by Mr. Pidcock of Exeter-Change, London, was usually fed with hay, straw, and vegetables of different kinds. He drank about nine pails of water in the day, besides ale that was given him by different visitors. The two elephants in the Museum of Natural History in Paris, one of which is represented in the Engraving, consumed about a hundred weight of hay, eighteen pounds of bread, several bunches of carrots, and a great quantity of potatoes, every day, without reckoning the food that they receive from the numerous persons who come to see them. They had no particular hours of eating, but would receive food at all times, except during those of their repose. In summer they drank nearly thirty pails full of water each.

These animals had the tenderest attachment for each other : whenever either of them testified any degree of alarm, the other immediately hastened to its assistance.

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this period these animals were by no means uncommon in the Roman empire. Metellus, having conquered the Carthaginians in Sicily, in the year 502, took their elephants to Rome, in number, according to Seneca, a hundred and twenty, and a hundred and forty-two according to Pliny. Claudius Pulcher had combats of elephants, in the Circus, in 665 ; and Lucullus, Pompeius, Cæsar, Claudius, and Nero, had also combats, both of elephants with each other, and of elephants against bulls and men. Pompeius had them yoked to his chariot at his triumph in Africa. Germanicus exhibited dancing elephants. It was in the reign of Nero that one of these unwieldy animals is said to have danced on a rope, while he carried a man on his back !!



This was always the case when they were struck by the appearance of any object which was new to them: they then ran from one side to the other, uttered their peculiar kind of noise, and caressed each other with their trunks. On these occasions the male exhibited signs of ardour, to which he was usually a stranger. These emotions were never more striking than when, on their first arrival in Paris, they were put together after a long separation. They immediately rushed towards each other, and sent forth cries of joy so animated and loud as to shake the place into which they were put.

The male elephant, possessed by Mr. Pidcock, the proprietor of the Menagerie at Exeter 'Change, was taught by his keepers to perform a great variety of tricks for the entertainment of the visitors. If a pot of ale was brought to him, he would put the extremity of his trunk into it, and, sucking up the liquor, would afterwards blow it into his mouth: this done, he would make a motion with his head, which the keeper always took care to tell the donor, was the animal's mode of expressing gratitude for the gift; and which probably the major part of the spectators believed to be really the case. He would take up a watch or even the smallest piece of money from the floor, and, on command, would put it again into the owner's hand or pocket. He would take from any person a piece of money, and give it to a boy (who attended for the purpose) for bread, fruit, or vegetables, which he immediately ate. If his keeper ordered him, he would unbolt the door of his den, or untie, with the finger at the extremity of his proboscis, a piece of strong cord that fastened to the door. When the keeper has been engaged in sweeping the den, the imitative animal has not unfrequently taken in his trunk another broom, and has appeared highly delighted in attempting to sweep the place after him.

The elephant that was given by the Grand Turk, in 1745, to the king of Naples, exhibited more than usual intelligence and familiarity. It frequently assisted the masons who were employed about the house where it was kept, by furnishing them with water, which it drew for the purpose, from an adjacent well, in a large copper vessel. This it carried to them whenever they called for it.





Wells & Son, 352 Strand

**THE ELEPHANT.**





The animal found one day that something was the matter with the vessel, since the water ran out of it. Having received some instruction, he carried it to the brazier, had it mended, and afterwards went on with his business as usual. This elephant was allowed to wander at large in the streets of Naples. He did no person any injury ; and he seemed delighted to play with children, whom he would sometimes place on his back with his trunk, and afterwards, by the same means, place them in safety on the ground.

The elephant is not only the most tractable, but the most intelligent of animals ; sensible of benefits, resentful of injuries, and endowed even with a sense of emulation : In India, they were once employed in launching ships ; one was directed to force a very large vessel into the water ; the work proved superior to his strength : his master, with a sarcastic tone, bidding the keeper take away this lazy beast and bring another : the poor animal instantly repeated his efforts, fractured his skull, and died on the spot. In Delhi, an elephant passing along the streets, put his trunk into a tailor's shop, where several people were at work ; one of them pricked the end with his needle ; the beast passed on ; but in the next dirty puddle filled his trunk with water, returned to the shop, and spurning every drop among the people who had offended him, spoiled their work.—An elephant in Adsmear often passed through the bazar or market, and, as he went by a certain herb-woman, always received a mouthful of greens ; at length he was seized with one of his periodical fits of rage, broke his fetters, and, running through the market, put the crowd to flight, and among others, this woman, who, in haste, forgot a little child she had brought with her. The animal recollecting the spot where his benefactress was wont to sit, took up the infant gently on his trunk, and placed it in safety on a stall before a neighbouring house.—Another, in his madness, killed his *cornac* or governor : the wife, seeing the misfortune, took her two children, and flung them before the elephant, saying, “ Now you have destroyed their father, you may as well put an end to their lives and mine.” It instantly stopped, relented, took the greatest of the children, placed him on its neck, adopted him for his *cornac*, and never



afterwards would permit any body else to mount it.— A soldier at Pondicherry, who was accustomed, whenever he received the portion that came to his share, to carry a certain quantity of it to one of these animals, having one day drank rather too freely, and finding himself pursued by the guards, who were going to take him to prison, took refuge under the elephant's body and fell asleep. In vain did the guard try to force him from this asylum, as the elephant protected him with his trunk. The next morning, the soldier, recovering from his drunken fit, shuddered with horror to find himself stretched under the belly of this huge animal. The elephant, which without doubt perceived the man's embarrassment, caressed him with his trunk, to inspire him with courage and make him understand that he might now depart in safety.

Mr. Forbes, in his *Oriental Memoirs*, says, “ The largest elephants are from ten to eleven feet in height, some are said to exceed it ; the average is eight or nine feet. They are fifty or sixty years before they arrive at their full growth ; the female goes with young eighteen months, and seldom produces more than one at a birth, which she suckles until it is five years old ; its natural life is about one hundred and twenty years. The Indians are remarkably fond of these animals, especially when they have been long in their service. I have seen an elephant valued at twenty thousand rupees ; the common price of a docile well-trained elephant is five or six thousand ; and in the countries where they are indigenous, the Company contract for them at five hundred rupees each, when they must be seven feet high at the shoulders. The mode of catching and training the wild elephants is now well known ; their price increases with their merit during a course of education. Some, for their extraordinary qualities, become in a manner invaluable ; when these are purchased, no compensation induces a wealthy owner to part with them.

“ The skin of the elephant is generally a dark grey, sometimes almost black ; the face frequently painted with a variety of colours ; and the abundance and splendour of his trappings add much to his consequence. The

Mogul princes allowed five men and a boy to take care of each elephant; the chief of them, called the mahawut, rode upon his neck to guide him; another sat upon the rump, to assist him in battle; the rest supplied him with food and water, and performed the necessary services. Elephants bred to war, and well disciplined, will stand firm against a volley of musquetry, and never give way unless severely wounded. I have seen one of these animals, with upwards of thirty bullets in the fleshy parts of his body, perfectly recovered from his wounds. All are not equally docile, and when an enraged elephant retreats from battle, nothing can withstand his fury: the driver having no longer a command, friends and foes are involved in undistinguished ruin.

“The elephants in the army of Antiochus were provoked to fight by shewing them the blood of grapes and mulberries. The history of the Maccabees informs us, that ‘to every elephant they appointed a thousand men, armed with coats of mail, and five hundred horsemen of the best; these were ready at every occasion; wherever the beast was, and whithersoever he went, they went also; and upon the elephants were strong towers of wood, filled with armed men, besides the Indian that ruled them.’

“I performed many long journeys upon an elephant given by Ragobah to Colonel Keating; nothing could exceed the sagacity, docility, and affection of this noble quadruped; if I stopped to enjoy a prospect, he remained immovable until my sketch was finished; if I wished for ripe mangos growing out of the common reach, he selected the most fruitful branch, and breaking it off with his trunk, offered it to the driver for the company in the houdah, accepting of any part given to himself with a respectful salam, by raising his trunk three times above his head, in the manner of the oriental obeisance, and as often did he express his thanks by a murmuring noise. When a bough obstructed the houdah, he twisted his trunk around it, and, though of considerable magnitude, broke it off with ease, and often gathered a leafy branch to keep off the sun.”



## THE GREAT MORSE, OR ARTIC WALRUS.

The morse, or walrus, is an animal of the seal kind, but differing from the rest in a very particular formation of the teeth, having two large tusks growing from the upper jaw, shaped like those of an elephant, but directed downwards: as the rest, it nearly resembles the seal, except that it is much larger, being from twelve to eighteen feet long. It has also the same habitudes, advantages, and imperfections; and frequents the same places that seals are known to reside in.

The general disposition and habits of the walrus are peaceful and inoffensive. If, however, their passions are roused by provocation or attack, these animals are furious and vindictive. When surprised on the ice, the affectionate females provide for the safety of their young ones, by flinging them into the sea, and conveying them to a secure distance. They then return in a great rage to the place where they were attacked, and they will sometimes attempt to fasten their teeth on the boats, in order to sink them, or will rise under them in great numbers, with the intention of oversetting them; at the same time exhibiting all the marks of fury, roaring in a dreadful manner, and gnashing their teeth with great violence. They are strongly attached to each other, and will make every effort in their power, even to death, to liberate an harpooned companion. A wounded walrus has been known to sink beneath the surface of the ocean, rise suddenly again, and bring up with it multitudes of others, who unite in an attack on the boat from whence the barbarous insult came. In a word, they are sagacious and harmless creatures who merit the kind treatment of mankind.

The following is Captain Cook's description of a herd of walruses, that were seen floating on a mass of ice off the northern part of the continent of America.—“ They lie (says he) in herds, of many hundred, upon the ice, huddling over one another like swine; and roar or bray so loud, that in the night, or in foggy weather, they gave us notice of the vicinity of the ice before we could see it. We never found the whole herd asleep, some being always upon the watch! These, at the approach of the boat, would wake those next to them; and the alarm being thus gradually communicated, the whole herd



*Reale & Son 334 Strand*

# ARCTIC WALRUS.

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would be awaked. But they were seldom in a hurry to get away, till after they had been once fired at.\* They then would tumble over one another into the sea, in the utmost confusion. And if we did not, at the first discharge, kill those we fired at, we generally lost them, though mortally wounded. Vast numbers of these animals would follow and come close up to the boats ; but the flash of a musket in the pan, or even the pointing of a musket at them, would send them down in an instant. The female walrus will defend her offspring to the very last, and at the expense of her own life, whether in the water or upon the ice. Nor will the young one quit the dam, though she be dead ; so that, if one be killed, the other is a certain prey."

We are informed by Crantz, in his account of Greenland, that walruses, when playing about in the water, have been frequently observed, with their long tusks, to draw sea-fowl beneath the surface, and, after a little while, to throw them up into the air. As they are not carnivorous animals, but live entirely on shell-fish and marine plants, they do not eat these birds, consequently this can only be done out of wantonness and frolic, just as men shoot young rooks or sea-gulls.

#### THE WHALE-TAILED MORSE

Frequents the seas that lie betwixt America and Kamtschatka, and are seldom seen upon the shore, unless driven there by tempestuous weather. They are always found in herds, in which the old ones keep behind, and drive the young ones before them, some at the same time going along the sides, by way of protection. They live in families, each consisting of perhaps a male and female, a half-grown young one, and a new-born cub ; and these families frequently unite, so as to form vast droves. In their manners they are peaceable and harmless, and have a very extraordinary attachment to each other. When one of them is barbarously hooked, or struck with a harpoon, the whole herd will attempt its rescue. Some will strive to overset the boat by going beneath it ; others will

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\* There seems to have been no motive for this brutality except the fun or sport of destroying.



fling themselves on the rope of the hook, and press it down in order to break it; and others again will make the utmost efforts to wrench the instrument out of the body of their wounded companion, thereby evincing a degree of intelligence and affection which entitles them to respect and sympathy.

In their conjugal affection, says Mr. Bingley, they are most exemplary. A male, after having used all his endeavours to release his mate, which had been struck, pursued her to the very edge of the water; and no blows that were given could force him away. As long as the deceased female continued in the water, he persisted in his attendance; and even for three days after she was drawn on shore, cut up, and carried away, he was observed to remain in expectation of her return.

These animals, which, like the last species, are eagerly pursued by cruel and avaricious seamen for the sake of their blubber and skins, are generally caught by means of a harpoon fastened to a long line. The strongest man in the boat strikes the instrument into the nearest animal. This done, twenty or thirty people on shore seize the rope, and drag the creature to land. The poor animal, assisted by its faithful companions, makes every possible resistance: it clings with its feet to the rocks till it leaves the skin behind; and often great fragments of rock will fly off before it can be secured by its savage assailants.

#### THE URSINE SEAL.\*

Ursine Seals live in families; every male being surrounded by from eight to fifty females, whom he guards with the utmost jealousy. Each family keeps separate from the others, although they lie by thousands on the shores which they inhabit. The males exhibit great affection towards their offspring, and tyranny towards the females. They are fierce in the protection of the former; and, should any monster attempt to carry off their cub, they will stand on the defensive, while the female conveys it away in her mouth. Should she, however, have the misfortune to drop it, the male instantly quits his enemy, falls on her, and beats her against the stones till he leaves

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\* For the Common Seal, see Vol. III.

her for dead. But if the young one be entirely carried off, he appears excessively affected, sheds tears, and exhibits every mark of sorrow.

Those animals that, through age or impotence, are deserted by the females, withdraw themselves from society, and not only become splenetic, peevish, and quarrelsome, but so much attached to their own stations, as to prefer death to the loss of them. If they perceive another animal approaching them, they are instantly roused from their indolence, snap at the encroacher, and give him battle. During the fight, they often insensibly intrude on the station of their neighbour, who then joins in the contest; so that at length the civil discord, attended with hideous growls, spreads along the whole shore.

This is one of the causes of the disputes which take place among these irritable creatures. But a much more serious cause is, when an attempt is made to seduce away any of their females. A battle is the sure consequence of the insult, and sad indeed is the fate of the vanquished animal: he instantly loses all his females, who immediately desert him and attach themselves to the victor.

When only two of the animals are engaged in combat, they rest at intervals, lying down near each other; then, rising both at once, they renew the battle. They fight with their heads erect, and turn them aside to avoid the blows. As long as their strength continues equal, they use only their fore-paws; but the moment that one of them fails, the other seizes him with his teeth, and throws him upon the ground. The wounds they inflict are very deep, and like the cut of a sabre; and it is said, that in the month of July scarcely one is to be seen that has not some mark of this description. At the conclusion of an engagement, such as are able throw themselves into the sea, to wash off the blood. They are exceedingly tenacious of life, and will sometimes live a fortnight after receiving such wounds as would immediately have destroyed any other animal.

When they come out of the water, they shake themselves, and smooth their hair with their hind feet; apply their lips to those of the females, as if to kiss them; lie down and bask in the sun with their hind legs up, which they wag as a dog does his tail. Sometimes they



lie on their back ; and sometimes roll themselves up into a ball, and thus fall asleep. They not unfrequently swim on their back, and so near the surface of the water that their hind feet are quite dry. They cut through the waves with great rapidity, frequently swimming at the rate of seven or eight miles an hour. Their cubs are as sportive as puppies, have mock fights, and tumble one another about on the ground. The male parent looks on with a sort of complacency, parts them, licks and kisses them, and, as it is said, seems to take a greater affection to the victor than to the vanquished.

#### THE LEONINE SEALS

Are found in great droves on the eastern shores of Kamtschatka. If an enemy, or man, appear among them, they immediately run off towards the sea. When, however, they find it impossible to escape without fighting, they become desperate, and turn on their assailant with great fury. Steller lived on Behring's Island for six days in a hovel surrounded by these animals. They soon became reconciled to him, would lie down near him, and even suffer him to play with their cubs. They have often disputes for the possession of their females ; and Steller witnessed several of their conflicts. He once witnessed a duel between two males which lasted for three days, and in which one of them received above a hundred wounds. The Ursine seals that were among them never interfered, but always hastened out of the way of their battles.

The females bring forth each a single young one at a birth. The cubs seem stupefied by much sleep, and are often taken by their parents into the water, and taught to swim ; and when they are tired, they climb on their mother's back. It is said, however, that the males frequently push them off again, in order to habituate them to this exercise.

The chase of these animals is esteemed by the barbarous Kamtschadales as an occupation of the highest honour, but is in truth one of the most inhuman sports ever devised by man. When they find one asleep, they approach it against the wind ; strike a harpoon, fastened to a long cord, into its breast, and run off with the utmost precipitation. The other end of the cord, being

fastened to a stake, prevents the animal from running entirely away, and they principally effect his destruction by flinging their lances into him, or shooting him with arrows. As soon as he is exhausted, they venture near enough to kill him with their clubs. They shoot the Leonine with poisoned arrows: he then plunges into the sea; but, unable to bear the poignancy of his wounds in the salt water, he swims in agony to the shore. If opportunity allow, they transfix him with their lances; if not, they leave him to die of the poison.

The voice of reason and justice cannot be too loudly raised against such atrocious practices as the above. Their existence among savage tribes is in itself monstrous, but it is to be feared that similar atrocities are practised in more polished nations, where semi-barbarism and uncivilized ignorance cannot be urged as pleas for such disgraceful abuses of human power.

The likeness of the upper part of the seal to the human body, combined with the obscurity which necessarily exists in regard to the inhabitants of the ocean, has given countenance to various relations of the actual existence of the creature of poetry and fable called the Mermaid; but although many accounts of eye witnesses have been published, all of them seem to relate to species of seals, and the actual exhibition of an assumed Mermaid in London in 1822, added no credit to the reported existence of mermaids, because it was generally believed that the upper part of a monkey had been adroitly united to the lower part of a fish.

### THE WOLF.

“ By wintry famine rous’d, from all the tract  
Of horrid mountains which the shining Alps,  
And wavy Appenine and Pyrenees  
Branch out stupendous into distant lands,  
Cruel as death! and hungry as the grave!  
Burning for blood! bony, and gaunt, and grim!  
Assembling Wolves, in raging troops, descend;  
And, pouring o’er the country, bear along,  
Keen as the North wind sweeps the glossy snow:  
All is their prize.”

THOMSON.

The wolf, from the tip of the nose to the insertion of the tail, is about three feet and a half long, and about two feet five inches high. His colour is a mixture of black, brown, and grey; and



his hair extremely rough and hard, but mixed toward the roots with a kind of ash-coloured fur. The eyes open slantingly upwards, in the same direction with the nose, and the colour of the eye-balls is of a fiery green, giving a fierce and formidable air to the whole visage.

The wolf is one of those quadrupeds, whose appetite for animal food is the most vehement, and whose means of satisfying this appetite are the most various, as Nature furnishes him with strength, cunning, agility, and every requisite for pursuing, overtaking, and conquering his prey. Yet with all these advantages, he frequently dies of hunger; being obliged to fly from human habitations, and to live in the forest; where the wild animals either elude him by their art or swiftness, or the supplies are too small to satisfy his rapacity. He is naturally dull and cowardly; but when pressed by hunger, he braves danger, and even ventures to attack animals under the protection of man; as lambs, sheep, and even dogs. When his excursion proves successful, he returns to the charge, until being wounded, or hard pressed, by the shepherds, or their dogs, he retires to the thickest part of the forest, content to pursue those smaller animals which, even when taken, afford him but a scanty supply. However, when his necessities are very urgent, he faces certain destruction: he attacks women and children, and sometimes even men; or, becoming furious by continual agitations, he ends his life in madness.

These ferocious animals are natives of almost all the temperate and cold regions of the globe; and they were formerly so numerous in this island, that King Edgar commuted the punishment for certain offences into a requisition of a certain number of wolves' tongues from each criminal; and he converted a heavy and oppressive tax on one of the Welsh princes, into an annual tribute of three hundred wolves' heads.

Wolves were very noxious to the flocks in Scotland, in 1577: nor were they entirely destroyed till about a century afterwards, when the last wolf was killed in Lochabar, by Sir Ewen Cameron of Lochiel.

Notwithstanding the savage disposition of the wolf when taken young, he is capable of being tamed. An instance of this was exhibited in a wolf belonging to the late Sir Ashton Lever: this animal, by proper education,





W. Peck Sc.

# The Wolf





was entirely divested of the ferocious character of its species. In Eastern countries, wolves are exhibited as spectacles to the people. When young, they are taught to dance, or rather to wrestle with a number of men ; and one of these animals, well instructed in dancing, is said to have been sold for five hundred French crowns. Buffon brought up several wolves. During the first year, he states that they were very docile, and even caressing ; and, if well fed, would neither disturb the poultry, nor any other animals ; but, that at the age of eighteen months, or two years, their natural ferocity appeared, and it was requisite to chain them, in order to prevent them from running off and doing mischief.

### THE HYÆNA.

These animals are natives of Asiatic Turkey, Syria, Persia, and many parts of Africa. They generally inhabit caverns and rocky places, prowling about for prey in the day-time. They sometimes assemble in troops, and have been known to follow the march of an army, in order to feast on the dead bodies of the slain.

The hyæna is about the size of a wolf, and, at first sight, has some similitude to that animal ; the head, however, is broader, the nose flatter, the ears longer, and the eyes not placed so obliquely but more like those of a dog. The legs are longer than those either of the dog or the wolf, and different from all other quadrupeds, in having but four toes as well on the fore feet as on the hinder. Its hair is of a dirty greyish colour, marked with black waves down the body ; and the head being generally held low, the back appears elevated, like that of the hog ; with a long bristly band of hair that runs all along the top of it.

When receiving its food, the eyes of this fierce animal glisten, the bristles of its back stand erect, and its teeth appear ; all of which give it a most frightful aspect, still further heightened by a tremendous howl. It is principally found in the most desolate and uncultivated parts of the torrid zone ; where it resides in the clefts of the rocks, the excavations of the mountains, or in subterraneous dens that it has formed for its own accommodation. It subsists by depredation like the wolf, but is much stronger and more courageous. It frequently attacks men, carries off cattle, breaks open the sheep-cots by night, and even scrapes up the graves, in order to de-



vour the bodies which they contain. One confined at Paris ate its own broken limb.

“ In Barbary,” says Mr. Bruce, “ the Moors take these animals by the ears, and haul them along without their offering any other resistance than that of drawing back.” Mr. B. locked up a goat, a kid, and a lamb, all day with a Barbary hyæna, when it was fasting, and in the evening he found each of the animals alive and unhurt ; but, on repeating an experiment of this kind at night, the hyæna ate up a young ass, a goat, and a fox, all before morning. In Barbary the hyænas seem to lose their courage, and to fly from man by day ; but in Abyssinia, they often prowl about even in the open day, and attack with savage fury every animal they meet with.— “ These creatures (says Mr. Bruce) were a general scourge to Abyssinia, in every situation, both of the city and the field ; and they seemed to surpass even the sheep in number. From evening till the dawn of day, the town of Gondar was full of them. Here they sought the different pieces of slaughtered carcasses which this cruel and unclean people were accustomed to expose in the streets without burial. Many time in the night, when the king had kept me late in the palace, on going across the square from the king’s house, I have been apprehensive lest they should bite me in the leg. They grunted in great numbers around me, although I was surrounded with several armed men, who seldom passed a night without wounding or slaughtering some of them. One night in Maitsha, being very intent on an observation, I heard something pass behind me towards the bed ; but on looking round, could perceive nothing. Having finished what I was then about, I went out of my tent, resolving directly to return : this I immediately did, and in so doing perceived two large blue eyes glaring at me in the dark. I called my servant to bring a light ; and we found a hyæna standing near the head of the bed, with two or three large bunches of candles in his mouth. To have fired at him, would have been at the risk of breaking my quadrant or other furniture ; and he seemed, by keeping the candles steadily in his mouth, to wish at that time for no other prey. As his mouth was full, and he had no claws to tear with, I was not afraid of him ; and, with

a pike, stuck him as near the heart as I could. It was not until I had done this that he showed any sign of fierceness; but, upon feeling his wound, he dropped the candles, and endeavoured to run up the shaft of the spear to arrive at me, so that I was obliged to draw a pistol from my girdle and shoot him; and nearly at the same time my servant cleft his skull with a battle-axe. In a word, the hyænas were the plague of our lives, the terror of our night-walks, and the destruction of our mules and asses, which, above every thing else, are their favourite food."

#### THE SPOTTED, OR LAUGHING HYÆNA

Is somewhat larger, and of a light brown diversified with black spots; its face, and the upper part of its head, are black, and the neck is furnished with an upright black mane. When food is shewn it, or when interrupted in the act of eating, it utters a singular laughing noise, by which it is supposed to lure travellers in its native forests to their destruction.

A remarkable instance of the enormous powers of these animals occurred a few years since. The den of a spotted hyæna in the Tower wanted some repairs. These the carpenter completed by nailing on the floor a thick oak plank, seven or eight feet in length, with at least a dozen nails, each longer than the middle finger of the hand. At one end of this plank there was, however, a small piece left that stood up higher than the rest; and the man, not having a proper chisel with him to cut it off, returned to his shop for one. During his absence some persons came in to see the animals, and the hyæna was let down by the keeper from the other part of his den. He had scarcely been in the place an instant, before he espied the piece that was left at the end of the plank, and, seizing it in his teeth, he tore up the plank, drawing every nail.

These quadrupeds inhabit several parts of Africa, and are numerous at the Cape of Good Hope, where they sometimes enter the huts of the inhabitants, and carry off the children.

#### THE JACKAL

Is about the size of a terrier dog, resembling the fox in the hinder parts, particularly the tail, and the wolf in the fore parts, especially the nose. Its legs are shorter than those of the fox, and its colour is a bright yellow; whence it has been called, in Latin, the "golden wolf." It is an inhabitant of the warmer regions of Asia



and Africa, and generally resides in woods, or rocky places. The female goes a month with young, and brings forth from five to eight cubs.

The jackal seems placed, in the scale of creation, between the wolf and the dog; adding to the savage fierceness of the former the impudent familiarity of the latter. Its cry is a howl mixed with barking, and a lamentation resembling that of human distress. These animals seldom go alone, but in packs of forty or fifty. Every day they form a combination against the other inhabitants of the forest, and nothing can escape them; for though content to take up with the smallest quadrupeds, they have courage, thus united, to face the largest. They have very little fear of mankind, but pursue their game to their doors; enter insolently into the sheepfolds, the yards, and the stables; and if they can find nothing else, they devour even harness, boots, or shoes, and run off with what they have not time to swallow.

Ever rapacious and insatiate, they not only attack the living, but scratch up the new-made graves, disinter, and greedily devour the dead, however putrescent. In the uninhabited parts of the country, they frequently pursue during a whole night with unceasing assiduity; keeping up the cry, and at length, by great perseverance, tire down the prey; but just at the moment when going to share the fruits of their labour, the lion, the tiger, or the leopard, comes in, satiates itself upon the spoil, and leaves to its unfortunate provider merely the bare carcass.

#### THE BARBARY JACKAL, OR THALEB,

Is the most adroit and active animal that can be imagined.

It is about the size of the common fox, and is of a brownish fawn-colour. From behind each ear runs a black line, which divides into two, extending downward along the neck. The tail is bushy, and surrounded by three dusky rings.

The cunning of these animals is pleasingly depicted in the following narration of M. Sonnini:—"One day, as I was meditating in a garden in Egypt, I stopped near a hedge. A thaleb, hearing no noise, was coming through the hedge towards me; and, when he had cleared himself, was just at my feet. On perceiving me, he was seized with such surprise, that he remained motionless for some seconds, without even attempting to escape, his eyes fixed

steadily on me. Perplexity was painted in his countenance, with a degree of expression of which I could not have supposed him susceptible, and which denoted great delicacy of instinct. On my part, I was afraid to move, lest I should put an end to this situation, which afforded me much pleasure. At length, after he had taken a few steps, first towards one side and then the other, as if so confused as not to know which way to get off, and keeping his eyes still turned towards me, he retired; not running, but stretching himself out, or rather creeping with a slow step, setting down his feet one after another with singular precaution. He seemed so fearful of making a noise in his flight, that he held up his large tail, almost in an horizontal line, that it might neither drag on the ground nor brush against the plants. On the other side of the hedge I found the fragments of his meal: it had consisted of a bird of prey, great part of which he had devoured."

#### THE ARCTIC FOX.

Is smaller than the common fox, and of a blueish-gray colour. The hair is very thick, long, and soft. The nose is sharp, and the ears short, and almost hid in the fur. The tail is shorter, but more bushy than that of the common fox.

The following entertaining account of the Arctic fox is given by Steller, the Russian traveller:

"During my unfortunate abode (says he) on Behring's Island, I had but too many opportunities of studying the nature of these animals, which far exceed the common fox in impudence, cunning, and roguery. They forced themselves into our habitations by night as well as by day, stealing all that they could carry off; even things that were of no use to them, such as knives, sticks, and clothes. They were so ingenious as to roll down our casks of provisions, and then to steal the meat out with such skill, that, at first, we could not bring ourselves to ascribe the theft to them. While employed in stripping an animal of its skin, it has often happened that we could not avoid stabbing two or three foxes, from their rapacity in tearing the flesh out of our hands. If we buried this flesh ever so carefully, and even added stones to the weight of earth that was upon it, they not only found it out, but with their shoulders pushed away the stones. If, in order to secure it, we put any animal on the top of a high post in the air, they either dug up the earth at the bottom of the post, and thus tumbled the whole down, or one of them climbed up, and with incredible artifice and dexterity threw down what was upon it.



“ They watched all our motions, and accompanied us in whatever we were about to do. If the sea threw up an animal of any kind, they devoured it before we could arrive to rescue it from them : and if they could not consume the whole of it at once, they trailed it off in portions to the mountains, where they buried it under stones before our eyes, running to and fro as long as any thing remained to be conveyed away. While this was doing, others stood on guard, and watched us. If they saw any one coming at a distance, the whole troop would combine at once, and begin digging all together in the sand, till even a beaver or sea-bear in their possession would be so completely buried under the surface, that not a trace of it could be seen. In the night time, when we slept in the field, they came and pulled off our night-caps, and stole our gloves from under our heads, with the beaver-coverings, and the skins that we lay upon. In consequence of this, we always slept with our clubs in our hands, that if they awoke us we might drive them away or knock them down.

“ Whenever we made a halt to rest, they gathered around us, and played a thousand tricks in our view ; and when we sat still, they approached us so near that they gnawed the thongs of our shoes. If we lay down, as if intending to sleep, they came and smelt at our noses, to find whether we were dead or alive. On our first arrival, they bit off the noses, fingers, and toes of our dead, while we were preparing the grave ; and they thronged in such a manner about the infirm and sick, that it was with difficulty we could keep them off.

“ Every morning we saw these audacious animals patrolling about among the Leonine seals, and sea-bears, that were lying on the strand ; smelling at such as were asleep, to discover whether some one of them might not be dead : if that happened to be the case, they proceeded to dissect him immediately ; and soon afterwards all were at work in dragging the parts away. Because the seals sometimes in their sleep overlaid their young ones, the foxes every morning examined the whole herd, one by one, as if conscious of this circumstance, and immediately dragged away the dead cubs from their dams.

“ As they would not suffer us to be at rest either by night or day, we became so exasperated against them, that we killed them, young and old, and harassed them by every means we could devise. When we awoke in the morning, there always lay two or three that had been knocked on the head in the preceding night ; and I can safely affirm, that, during my stay upon the island, I killed above two hundred of these animals with my own hands. On the third day after my arrival, I knocked down with a club, and within the space of three hours, upwards of seventy of them, and made a covering to my hut with their skins. They were so

ravenous, that with one hand we could hold to them a piece of flesh, and with a stick or axe in the other could knock them down.

“ Like the common foxes, these animals were the most sleek and full of hair in the months of October and November. In January and February their hair was extremely thick. In April and May they began to shed their coat; in the two following months they had only wool upon them, and appeared as if they went in waistcoats. In June they produced their cubs, nine or ten at a brood, in holes and clefts of the rocks. They were so fond of their offspring, that, to scare us away from them, they barked and yelled like dogs; by which they betrayed their covert: but no sooner did they perceive that their retreat was discovered, than (unless they were prevented) they dragged the young ones away in their mouths, and endeavoured to conceal them in some more secret place.

“ In heavy falls of snow, these animals buried themselves in that substance, and there lay as long as it continued of a sufficient depth. They were able to swim across the rivers with great agility. Though at this time they were found in immense numbers on Behring's Island, they had probably been conveyed thither on the drift-ice from the continent; and, having been afterwards nourished by the great quantity of animal substances thrown ashore by the sea, they had become thus enormously multiplied.”



## LECTURE LVII.

## QUADRUPEDS (CONTINUED)

## THE LION.

Fiercest of all, the lordly lion stalks,  
 Grimly majestic in his lonely walks ;  
 When round he glares, all living creatures fly ;  
 He clears the desert with his rolling eye.  
 Say, mortal, does he rouse at thy command,  
 And roar to thee, and live upon thy hand ?  
 Dost thou for him in forests bend thy bow,  
 And to his gloomy den the morsel throw,  
 Where bent on death lie hid his tawny brood,  
 And couch'd in dreadful ambush pant for blood,  
 Or, stretch'd on broken limbs, consume the day  
 In darkness wrapt, and slumber o'er their prey ?  
 By the pale moon they take their destin'd round,  
 And lash their sides, and furious tear the ground.  
 Now shrieks and dying groans the desert fill ;  
 They rage, they rend ; their rav'nous jaws distil  
 With crimson foam ; and when the banquet's o'er,  
 They stride away and print their steps with gore :  
 In flight alone the shepherd puts his trust,  
 And shudders at the talon in the dust.

YOUNG.

THE lion's outward form is striking ; his look bold and confident ; his gait proud ; and his voice terrible. Compact, and well proportioned, he is a perfect model of strength united with agility ; and it is only requisite to see him, to be assured of his superior force.

His broad face, surrounded with a long bushy mane, extending from the top of the head to behind the shoulders, and hanging down to his knees, confers a peculiar majestic aspect ; the eyes are bright and fiery, and the tongue has prickles as hard as a cat's claws. The hair on the hinder parts of the body is short, smooth, and of a pale yellow, whitish beneath. The ears are roundish, short, and almost entirely concealed under the hair of his front. The shagginess of the fore-part, gives the hinder part a naked









appearance. The tail is long and very strong, with a bush of hair at the tip; the legs are thick and fleshy; and the feet are short; the length of the claws is about an inch and a quarter, are of a whitish colour, very crooked, and can be extended or retracted into the membranous sheath at pleasure: their points are seldom blunted, as they are never extended but when he seizes his prey. His gait is stately, grave, and slow, though always in an oblique direction. His movements are not equalled or measured, but consist of leaps and bounds; which prevents him from stopping suddenly, and makes him often overleap his mark. The strength of his muscles is indicated by his prodigious leaps and bounds, often twenty feet at once; by the ease with which he moves the skin of his face, and particularly of his forehead; and, lastly, by the faculty of erecting and agitating the hair of his mane when irritated.

The female, or lioness, has no long hair about her head or shoulders; in her are seen distinctly the whole face, head, ears, neck, shoulders, breast, &c. all these parts being in some measure concealed under the long hair of the male, give the female a very different appearance: besides, she is considerably less than the male. She is naturally less strong, courageous, or mischievous than the lion; but when she has young, she becomes equally formidable, and even more ferocious; as, at that time, she makes incursions with the utmost intrepidity; destroys both men and animals, without distinction; loads herself with the spoil, and carries it home reeking to her cubs, whom she accustoms betimes to cruelty and slaughter. She usually brings forth in the spring, in most sequestered and inaccessible places: and when she fears to have her retreat discovered, she often hides her tracks, by retracing her ground, or by brushing them out with her tail. Sometimes also, when her apprehensions are great, she transports her offspring from one place to another; and, if obstructed, defends them with determined courage, and fights to the last extremity.

Many countries were formerly infested by lions, where none are now to be seen. It is well known that they have long been extirpated from Europe; and yet, in the time of Aristotle, they were found in all the mountains of the north of Greece, from the river Nestus, near Abdera, in Thrace, almost to the Achelous in Acarnania. According to Herodotus, the camels that carried the baggage of the army of Xerxes, were attacked by lions in Pæonia, one of the countries of Macedon. Pausanias, who records the same fact, adds, that these lions often went southward as far as Mount Olympus, which separated Macedonia from Thessaly. At present, the lion is



by no means common even in Asia, if we except some countries between India and Persia, and parts of Arabia.

In short, in those countries which lions chiefly inhabit, their numbers were infinitely greater in former times than they are at present. It is scarcely to be conceived how, otherwise, the Romans were able to procure the prodigious number of these animals, which, from time to time, they exhibited in their public shows. Pliny has supplied us with details on this subject, which almost surpass all belief. "Quintus Scævola (he says) was the first who exhibited many of them at once in the Circus, during the time he was ædile. Sylla, in his prætorship, had a hundred lions, all males, to fight at the same time. Pompey afterwards six hundred (of which three hundred and fifty were males), and Cæsar five hundred." Seneca, it is true, informs us that those of Sylla had been sent to him by Bocchus, king of Mauritania; but, at this day, the princes of that country consider one or two of these animals as a grand present. The same abundance continued, during some time, under the emperors; but, in the second age, it appears to have begun to diminish, since Eutropius then considered the appearance of a hundred lions, in the triumph of Marcus Aurelius, as an exhibition of great magnificence. It was at length considered necessary to prohibit the combat of lions in the mass, and to confine it to that of single animals, lest there should be a want of animals for the Circus. This law, however, was repealed by Honorius; the destruction continued, and the pursuing of lions for the supply of the games, drove them to seek for security in the depths of the forests, where to the present day they still confine themselves.

The ancients were not ignorant of most of the circumstances relative to the production of the lion. Plutarch expressly says that the lioness is the only carnivorous animal whose offspring come into the world with their eyes open; and Ælian informs us that Democritus had asserted the same thing long before Plutarch. There are known to be varieties of the lion species, which in modern times have not been observed by any naturalist or traveller; and others which have been only lately re-observed. Among the latter is the lion without a mane, mentioned

by Solinus and Oppian, which they have attributed to a mule breed between the lioness and the leopard. M. Olivier, in his travels in Persia, has assured us that such a race exists at this time in the neighbourhood of Bagdad. The ancient writers speak of *black lions*. Those of India, according to Ælian, were of that colour, as likewise those of Syria, according to Pliny; and those of Æthiopia, according to Oppian. It is well known, that, in all countries inhabited by these animals, there are some more brown than others; and many of the latter may have a blackish cast.

The lion, whose figure accompanies the present account, was one of the most beautiful animals of his kind that ever was seen in captivity. He was caught between Constantine and Bonne, in the dominion of Algiers, after a chase of three day. The Dey of Constantine presented him to the French republic; and he was deposited in the Menagerie of the Museum at Paris. This lion devoured every day ten pounds of flesh, and lapped about half a pail full of water.

A lion, about three months old, was caught in 1787 in one of the forests of Senegal, in Africa; and Pelletau, at that time the director of the African company in that colony, undertook to superintend the animal's education. The mildness of his physiognomy, and the unusual gentleness of his disposition, rendered this lion a great favourite with all persons who saw him. Sensible of the good treatment that he received, he seemed, on all occasions, highly delighted with the caresses and attention of his friends, and was, in most respects, as tractable as any domestic animal could be. Such was his love of society, that he was always delighted to be in a room where many persons were assembled: and what was very extraordinary, he lived in perfect harmony, and was at all times on the best terms, with the other animals of every species, that were kept in his master's house. He slept in the same place with sheep, dogs, cats, monkeys, geese, ducks, &c. When he was about eight months old, a bitch produced two whelps on his bed. This new family excited a lively interest in the lion; and if he had been the parent of the little animals, he could not have displayed for them an attachment more tender than that which was remarked



in him. One of the whelps died ; his affection was redoubled towards the one that was left ; and this affection appeared to regulate all his movements. At the age of fourteen months, this lion was (in 1788) embarked, with his little companion, for France. It was feared that the change of situation and habits would have such influence as to render him in some degree ferocious. This, however, was not the case : he was always the same, and could at all times be allowed to range at liberty in the vessel. He was landed at Havre, and (attended by his faithful dog) was, with only a cord attached to his collar, conducted thence to Versailles. On the death of the dog, which took place some little time after their arrival at Versailles, he seemed to be very disconsolate and miserable ; and it was thought necessary to supply the loss of his companion by putting into his den another animal of the same species. The second dog, terrified at the sight of so tremendous a beast, immediately endeavoured to conceal himself ; and the lion, surprised by the noise, struck the animal with one of his fore paws, and killed it on the spot. He did not, however, attempt to devour it. A third dog was put into his den, and lived with him for some years afterwards.

Equally courageous with the lion, the lioness, when pressed by hunger, will attack every species of animal that comes in her way. She is, like him, generally compelled to have recourse to stratagem, to conceal herself from observation by couching on her belly in the midst of herbage or underwood, and there to wait till the prey comes within her reach. She then suddenly rushes on the victim, seizes it at the first bound, and soon destroys it. In the forests of Africa, and on the borders of deserts, in the countries of torrid climates, inhabited by these animals, they generally feed on the gazelles and apes, which have no means of escaping their attack but by a precipitate flight. It has been remarked that the monkeys and other four-handed animals of the African forests which delight in running about among the branches of the loftiest trees, find there a secure asylum from the talons of the lions ; and that the latter, notwithstanding their strength, their agility, and the sharpness of their claws, are not able to climb into the trees after





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# ALIONESS & HER WHELPS.

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them, like some others of the feline species, and particularly the tiger; the size, weight, and general conformation of whose body is very similar in most respects to that of the lion.

Young lions are, at first, entirely destitute of hair; and the long hair or mane on the neck and round the face of the males does not begin to appear till the age of nearly three years and a half; and, from that time, continually increases in quantity. The hair of all these young animals is at first woolly, and not of the same colour as that of their parents, but a mixed grey and red, marked by a great number of narrow brown stripes. These are very distinct at the middle of the back, and toward the origin of the tail; and they are disposed transversely on each side of a longitudinal stripe, of the same colour, that extend from the back of the head to the end of the tail.

Young lions have therefore a singular and very peculiar kind of *livery*, if it may be so called, and it is possible that this disposition of their shades, (which shows their connexion with the fasciated *feline* species) remarked, by travellers, in young individuals, and thence attributed to the full-grown animals, may have afforded ground for the notion entertained by the ancients, and mentioned both by Ælian and Oppian, that there was in the Eastern deserts a race of striped lions.

The young lions present, at first, only three of the essential characters of their species; namely, a thick neck, the muzzle and chin rounded, and the three parts of their face (the forehead, nose, and lower part) equal. But, as they increase in size and age, their stripes disappear, and their colours resemble those of their parents: the proportions of the different parts of their body and limbs become also by degrees similar to those of the adult animals.

About the year 1650, says Mr. Bingley, when the plague raged at Naples, Sir George Davis, the English Consul there, retired to Florence. One day, from curiosity, he went to visit the Grand Duke's dens. At the further end of the place, in one of the dens, lay a lion, which the keepers, during three whole years, had not been able to tame, though all the art and gentleness imaginable had been used. Sir George no sooner appeared at the gate of the den, than the lion ran to him with all the indications of transport that he was capable of expressing. He reared himself up and licked his hand,



which this gentleman put in through the iron grate. The keeper, affrighted, pulled him away by the arm, entreating him not to hazard his life by venturing so near the fiercest creature of his kind that had ever entered those dens: Nothing, however, would satisfy Sir George; but in spite of all the keeper said to him, he would go into the den. The instant he entered, the lion threw his paw upon his shoulders, licked his face, and ran about the place, fawning, and as full of joy as a dog would have been at the sight of his master

### THE TIGER.

————— The tiger darting fierce  
Impetuous on the prey his glance has doom'd.

This powerful and ferocious animal we have depicted in action from one of the celebrated engravings of Riden-ger, and his portraiture will better bespeak his form than any verbal description. It was proverbial among the ancients, that, "As the peacock is the most beautiful among birds, so is the tiger among quadrupeds." The glossy smoothness of his hair, the extreme blackness of the streaks with which he is marked, and the bright yellow colour of the ground which they diversify, cannot fail to excite the admiration of every beholder: whilst his slender, delicate, and truly elegant form bespeaks extreme swiftness and agility.

Unhappily, however, this animal's disposition is as mischievous as its form is admirable; and it seems to partake of all the noxious qualities of the lion, without possessing any of his good ones. The tiger is fierce without provocation, and cruel without necessity. In attacking a flock, or a herd, it gives no quarter, but levels all indiscriminately; and scarcely finds time to appease his appetite, while intent upon satisfying the malignity of its nature, and in this resembles man, who in like manner too often takes delight in destroying living creatures for the mere pleasure of destruction. It fears neither the threats nor the opposition of mankind; the beasts both wild and tame become the victims of its insatiable fury, and it not unfrequently ventures to attack the lion itself.

In proof of the enormous strength of this creature, it has been remarked, that whenever it kills a large animal,

such as a horse or a buffalo, it carries off its prey to the forest; dragging it along with such facility, that the swiftness of its motion seems scarcely retarded by the enormous load it sustains. Although gorged with carnage, his thirst for blood is not appeased; he seizes and tears in pieces a new prey with equal fury and rapacity, the very moment after devouring a former one; he lays waste the country he inhabits; he attacks young elephants and the rhinoceros. He seems to have no other passion than to indulge in a constant thirst after blood, a blind fury which knows no bounds or distinction, and which often stimulates him to devour his own young, and to tear the mother in pieces for endeavouring to defend them. He lies in wait on the banks of rivers, &c. where the heat of the climate obliges other animals to repair for drink. Here he multiplies his massacres; for he no sooner kills one animal, than he flies with equal fury upon the next, with no other view than to plunge his head into their bodies and drink their blood. His usual method of taking his prey is, by concealing himself, and springing suddenly on his victim; and it is said, that if he misses his object, or is unexpectedly repulsed, he makes off, without repeating the attempt. He expresses his resentment in the same manner as the lion; moving the muscles and skin of his face, shewing his teeth, and shrieking in the most frightful tone: his voice, however, is very different from that of the lion, being rather a scream than a roar. Neither force, restraint, or violence, can tame him; he is equally irritated with good as with bad treatment; he tears the hand which nourishes him, with equal fury as that which administers blows; he roars and is enraged at the sight of every living creature.

“ I was informed (says Pennant) by very good authority, that some gentlemen and ladies, being on a party of pleasure, under a shade of trees, on the banks of a river in Bengal, observed a tiger preparing for its fatal spring; one of the ladies, with amazing presence of mind, laid hold of an umbrella, and furled it full in the animal's face, which instantly retired, and gave the company opportunity of removing from so terrible a neighbour. Another party had not the same good fortune: a tiger darted among them while they were at dinner, seized on



one gentleman, and carried him off, and he never more was heard of." There is in some parts of India a popular notion, that the rhinoceros and the tiger are in friendship, because they are found near each other. But according to Mr. Pennant, the fact is, that the rhinoceros, like the hog, loves to wallow in the mire; and on that account frequents the banks of rivers: the tiger, to quench his raging thirst, is met with in places contiguous to them.

"We went (says an eye-witness) on shore on Sangar Island, to shoot deer, of which we saw innumerable tracks, as well as of tigers. We continued our diversion till nearly three o'clock; when, sitting down by the side of a jungle to refresh ourselves, a roar like thunder was heard, and an immense tiger seized on one of the party, Mr. Monro, the son of Sir Hector Monro, bart. and rushed again into the jungle, dragging him through the thickest bushes and trees, every thing giving way to its monstrous strength; a tigress accompanied his progress. The united agonies of horror, regret, and fear, rushed at once upon us. I fired at the tiger; he seemed agitated. My companion fired also; and in a few moments after this, our unfortunate friend came up to us, bathed in blood. Every medical assistance was vain; and he expired in the space of twenty-four hours, having received such deep wounds from the teeth and claws of the animal, as rendered his recovery hopeless. A large fire, consisting of ten or twelve whole trees, was blazing near us at the time this accident took place, and ten or more of the natives were with us. The human mind can scarcely form any idea of this scene of horror. We had but just pushed our boat from the shore, when the tigress made her appearance, almost raging mad, and remained on the sand all the while we continued in sight."

Tigers are very frequent in China, and in the roads travellers are seen with lanterns carried before them, to secure them from the attack of these animals. Tigers are particularly fatal to wood-cutters and labourers about forests; and they have been known to swim to boats at anchor at a little distance from the shore, and snatch men from on board. In Java, when any person of rank goes out into the country, he has with him men who blow French-horns, the sound of which frightens them. Tiger-





*The Tiger*





hunting is a favourite amusement among the Eastern princes, who search them, attended by bodies of men well mounted and armed. As soon as they are roused, they are attacked on all sides with pikes, arrows, and sabres, and presently destroyed. This pursuit is, however, attended with danger ; for if the tiger is only wounded, he seldom retreats without sacrificing some of the party. Men, covered with a coat of mail, or armed only with a shield, a poinard, and a short scymitar, attack them singly, and often with success.\*

The female produces four or five young at a litter ; and, although furious at all times, upon this occasion she exceeds her usual rapacity. If her young be taken from her, she pursues the spoiler with incredible rage : he, in order to save a part, drops one of her cubs, with which she immediately returns to her den, and again pursues him ; he then drops another, and by the time she has returned with that, he generally escapes with the remainder ; but if the tigress be robbed of her whole family, she becomes perfectly infuriate, boldly approaches even the towns themselves, and commits incredible slaughter.

Mr. Forbes, in his *Oriental Memoirs*, gives the following interesting description of a tiger-hunt, upon the banks of the Ganges, near Chinsura in Bengal, in April 1784 :

“ At one o'clock this morning, thirty elephants, with the servants, and refreshments of all kinds, were dispatch-

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\* A beautiful young tiger, brought in the Pitt Indiaman from China, in the year 1790, admitted every kind of familiarity from the people on board. It seemed to be quite harmless, and as playful as a kitten. It frequently slept with the sailors in their hammocks ; and would suffer two or three of them to repose their heads on its back, as upon a pillow, while it lay stretched out upon the deck. Having one day stolen a piece of beef from the carpenter, he followed the animal, took the meat out of its mouth, and beat it severely for the theft : which punishment it suffered like a dog. It would frequently run out on the boltsprit ; climb about the ship like a cat ; and perform many other tricks, with an agility that was astonishing. There was a dog on board, with which it would often play in the most diverting manner. This animal was taken on board the ship when it was only a month or six weeks old, and arrived in England before it had quite completed its first year. On its arrival it was presented to the king, and was afterwards deposited in the Tower of London. It even there continued to be perfectly good-natured, and was in no instance known to be guilty of any savage or mischievous tricks.



ed ; at two we all followed in palanquins ; at a quarter after four we reached the encampment, and having rested near two hours, we mounted our elephants, and proceeded to the jungle.

“ We had not reached five hundred yards beyond the jungle, when we heard a general cry on our left of *Baug, baug, baug* ! On hearing this exclamation of tiger ! we wheeled, and, forming the line anew, entered the great jungle, when the spot where a single tiger lay having been pointed, on the discharge of the first gun, a scene presented itself, confessed by all the experienced tiger-hunters present, to be the finest they had ever seen. Five full grown royal tigers sprung together from the same spot, where they had sat in bloody congress. They ran diversely ; but running heavily, they all couched again in new covers within the same jungle, and all were marked. We followed, having formed the line into a crescent, so as to embrace either extremity of the jungle ; in the centre were the boudar (or state) elephants, with the marksmen, and the ladies, to comfort and encourage them.

“ The gentlemen had each an elephant to himself. When we had slowly and warily approached the spot where the first tiger lay, he moved not until we were just upon him, when, with a roar that resembled thunder, he rushed upon us. The elephants wheeled off at once, and (for it is not to be described by any quadruped motion we know, I must therefore coin a term for the occasion) shuffled off. They returned, however, after a flight of about fifty yards, and again approaching the spot where the tiger had lodged himself, towards the skirts of the jungle, he once more rushed forth, and springing at the side of an elephant upon which three of the natives were mounted, at one stroke tore a portion of the pad from under them ; and one of the riders, panic-struck, fell off. The tiger, however, seeing his enemies in force, returned, slow and indignant, into his shelter ; where, the place he lay in being marked, a heavy and well directed fire was poured in by the principal marksmen, when, pushing in, we saw him in the struggle of death, and growling and foaming he expired.

“ We then proceeded to seek the others, having first

distinguished the spot by pitching a tall spear, and tying to the end of it the muslin of a turban. We roused the other three, in close succession, and, with little variation of circumstances, killed them all; the oldest, and most ferocious of the family, had, however, early in the conflict, very sensibly quitted the scene of action, and escaped to another part of the country.

“ While the fate of the last and largest was depending, more shots were fired than in the three other attacks; he escaped four several assaults, and taking post in different parts of the jungle, rushed upon us at each wound he received with a kindled rage, and as often put the whole line to flight. In his last pursuit, he singled out an elephant upon which a lady was seated; and was at its tail, with jaws distended, and in the act of rising upon his hind paws to fasten on her, when fortunately she cleared the jungle, and a general discharge from the hunters having forced him to give up the chase, he returned to his shelter.

“ The chase being over, we returned in triumph to our encampment, and were followed by the spoils of the morning, and by an accumulating multitude of the peasants from the circumjacent villages, who pressed round an open tent in which we sat at breakfast, with gratulations, blessings, and thanksgiving. The four tigers were laid in front; the natives viewed them with terror, and some with tears.

“ An old woman, looking earnestly at the largest tiger, and pointing at times to his tusks, and at times lifting his fore-paws, and viewing his talons, her furrows bathed in tears, in broken and moaning tones narrated something to a little circle composed of three brahmins and a young woman with a child in her arms. No human misery could pierce the phlegm and apathy of the brahmins, and with them there was not a feature softened; but horror and sorrow were alternately painted in the face of the female, and, from her clasping at times her child more closely to her breast, I guessed the subject of the old woman's story, and, upon inquiry, I found that I was right in my conjecture. She was widowed and childless, she owed both her misfortunes to the tigers of that jungle,



and most probably to those which then lay dead before her, for they, it was believed, had recently carried off her husband and her two sons, grown up to manhood, and now she wanted food : in the phrensy of her grief she alternately described her loss to the crowd, and in a wild scream demanded her husband and her children from the tigers ; indeed it was a piteous spectacle !”

### THE PANTHER.

Of all this tribe, whose skins are so beautifully spotted, and whose natures are so mischievous, this animal may be considered as the foremost. He is from five to six feet in length, measuring from the nose to the tail. His colour is, in general, of a bright tawney yellow, elegantly marked with black spots, disposed in circles of four or five each, with a single spot in the centre ; his chest and belly are white. The ears of this animal are short and pointed ; his eyes fierce and restless ; and his aspect remarkably ferocious.

The panther inhabits Africa, from Barbary to the remotest parts of Guinea. This species is next in size to the tiger ; next to it in cruelty, and in its general enmity to the animal creation. He is not so perfectly ungovernable as the tiger ; but, notwithstanding all attempts to render him obedient and tractable, he may rather be said to be subdued than tamed ; for he never entirely loses his natural ferocity. Accordingly, when kept with a view to the hunting of bucks, goats, or other animals, great care is necessary in training him, and still greater in conducting him. When leading out to the field, they put him in a cage and carry him on a cart. When the game is sprung, they open the door of the cage ; and he instantly springs towards the animal, often seizes him in a few bounds, throws him to the ground, and strangles him. But, if he happens to miss his aim, he becomes mad with rage, and sometimes falls upon his keeper, who, to prevent such accidents, carries with him pieces of flesh, or a lamb or a kid, which he throws to him to appease his fury.

Panthers appear to have been very numerous in the time of the Romans, and at present the species is said to extend from Barbary to the remotest parts of Guinea.

## THE LEOPARD.

The lively shining leopard, speckled o'er  
With many a spot, the beauty of the waste.

These quadrupeds are naturally very ferocious, and attack, without distinction, every thing they meet, sparing neither man nor beast. They seem to delight in the most impervious forests, but when they cannot obtain a sufficient supply there, they come out from their lurking places, and commit dreadful ravages among the flocks which are feeding on the plains.

The leopard is about four feet in length, exclusive of the tail, which commonly measures two feet and a half. It has a much more beautiful coat than a panther, the yellow being more brilliant, and the spots not disposed in rings, but clusters. It is a native of Senegal, Guinea, and the interior parts of Africa; and is also found in some parts of China, and among the mountains of Caucasus, from Persia to India.

The late Sir Ashton Lever, says Mr. Bingley, had a leopard, which he kept in a cage at Leicester House. It had become so tame, as always to seem highly pleased by caresses and attention, purring and rubbing its sides against the cage like a cat. Sir Ashton gave it to the royal menagerie in the Tower, where a person, before acquainted with it, saw it after an interval of more than a year, notwithstanding which it appeared instantly to recognise him, and began as usual to renew its caresses.

The panther is its principal enemy, and destroys many. The negroes make collars of their teeth, and attribute to them certain virtues. The negroes take these animals in pit-falls, covered at the top with slight hurdles, on which is placed some flesh as a bait. They make a banquet of their flesh, which is said to be as white as veal. Leopards' skins are often brought to Europe, and fetch a high price.

## THE PUMA, OR SOUTH AMERICAN LION,

Has a very small head, ears a little pointed, and eyes large. The back, neck, rump, and sides, are of a pale brownish red, mixed with dusky hairs; the breast, belly, and inside of the legs, cinereous. The tail dusky and ferruginous, the tip black; and the teeth are of a vast size. It is long bodied, and high on its legs; the length from nose to tail five feet three inches, of the tail two feet eight.



It inhabits America, from Canada to Brasil ; in South America is called *puma*, and by Europeans mistaken for the lion. It is the scourge of the colonies of the hotter parts of America, being fierce and ravenous in the highest degree. It swims over the broad rivers ; attacks the cattle in the very inclosures ; and, when pressed with hunger, spares not even mankind. In North America their fury seems subdued by the rigour of the climate ; and the smallest cur, in company with its master, makes them seek security, by running up trees ; but then they are equally destructive to domestic animals, and are the greatest nuisance the planter has : when lying in wait for the moose, or other deer, they squat close on the branch of some tree till those animals pass beneath, when they drop upon and soon destroy them. They also make wolves their prey. In the Museum of the Royal Society, is the skin of one killed just as it had pulled down a wolf. When it has satisfied itself with eating, it carefully conceals the rest of the carcase, covering it with leaves : if any other touches the relics, it never comes near them again.\*

#### THE LYNX.

This animal is proverbial for its strong sight, and the ancients believed that they could see through stone walls. There is no animal existing which is able to discover its prey at so great a distance as the lynx, and hence the phrase, “lynx-eyed.” They are seldom found in the open plains ; but, like the tiger, leopard, and panther, conceal themselves in the thick shelter of woods and forests. The wild cat, the martin, the ermine, and the squirrel, cannot escape him. He also seizes upon and destroys the stag, the roe-buck, and the hare. When sheep happen to be folded in the neighbourhood of his retreat, he will scratch

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\* The puma loses much of his savage nature in captivity, and may be rendered almost as gentle as a domestic animal. Buffon mentions a puma which would suffer himself to be patted with the hand ; and children were frequently known to mount astride upon his back, without his exhibiting the slightest symptom of resentment. Mr. Kean, the tragedian, when in London, has generally in his house a puma, belonging to Mr. Cross, the proprietor of the menagerie of Exeter 'Change. This animal is sometimes introduced into the room when he has company ; and by many persons is considered to be a lion.—*Bingley.*

his way through the earth, under the doors of the fold ; and, if not checked by the presence of the shepherd, will commit horrible devastations.

The lynx differs from the panther kind in its tail, which is at least half as short in proportion, and black at the extremity ; its fur is much longer, and the spots on the skin less livid, and confusedly mingled with the rest ; its ears also are remarkably longer, and tipped at the points with a black tuft of hair ; the colour round the eyes is white, and the physiognomy more placid and gentle than in most of the panther tribe. Sometimes it climbs the highest trees of the forest, and conceals itself among the branches, in order to watch for weazels, ermines, squirrels, and other animals. It also commits great devastations among the flocks, and frequently destroys great numbers of hares and fallow-deer ; is found in all the northern parts both of the old and new continents, but is seldom seen in warm, or even temperate countries.

The fur of the lynx is thick and soft, and is in great request for muffs, and other purposes of dress. The Russians sell the skins of lynxes to the Chinese, at a rate of from about fifteen shillings to five or six pounds each, exclusive of the fore-feet, which are also valuable, and sold separately.

#### THE ICHNEUMON.

There are several species of this animal nearly allied to each other ; but three in particular which differ in size, in colour, and in country of habitation. The first of these is the INDIAN ICHNEUMON, the Mangouste of Buffon.

It seldom exceeds the length of ten or twelve inches. Its tail also is shorter than that of the other species. The body is ornamented with transverse stripes alternately red and blackish, in number from twenty-six to thirty. The under part of the lower jaw is yellow ; and the lower parts of the legs are black.

The second species is a native of the Cape of Good Hope ; and there are three correct figures of it, namely, by Vosmaer, Edwards, and Buffon. This Ichneumon is one-fifth larger than the last. Its tail, as in that, terminates in a point. Its fur is more bright, and of an uniform colour, both on the body and legs.

The third species is common in Lower Egypt. It is much larger than either of the others, measuring about twenty inches in length, exclusive of the tail, which is at least as much. Its colour is a pale reddish-grey, each hair being annulated or mottled with brown and dusky, in such manner as to render the appearance of the fur speckled as in some of the larger baboons. The muzzle



and the feet are black; but it is a tuft of long black hairs terminating the tail, and expanding towards each side like a fan, which principally characterises the species.

These three kinds of *Ichneumon* resemble each other so exactly in their several proportions, that we cannot be surprized they should have been confounded. Their head is short, somewhat flattened on the forehead, and, from thence to the muzzle, exactly conical. The upper lip projects a little beyond the lower. On the head and feet the hair is smooth; but it is long and rough on all the other parts of the body. The shortness of the legs give to the *Ichneumon* the characteristic appearance of the ferret and polecat. It is at first sight difficult to ascertain whether these animals belong to the tribes which tread on the whole sole of the foot, as the bears, hedgehogs, and some others; or to those which tread only on the toes in walking, as the dogs and cats. From the length of the tarsus it has been imagined that the *Ichneumons* trod only on their toes; whilst, on the other hand, the nakedness of the whole under part of the foot would induce us to suppose that the entire sole was applied to the ground. Two of the species which were examined by M. Geoffroy, whilst alive, walked certainly on their toes only, and never rested upon their heel except during repose, or when they raised themselves upright on their hind feet, for the purpose of looking around them.

The *Ichneumon* is very common in Egypt, but it seldom allows itself to be observed. It is difficult to be approached, being exceedingly timid and fearful. It does not often run over the open grounds, but almost always glides along the channels which serve for watering the land; nor does it ever expose itself, except in situations where there is nothing by which it can be sheltered. Such, no doubt, is the cause of those undulating motions, and of that uncertain and oblique gait which this animal always has in a state of domestication.

It is, says M. Geoffroy, easily tamed, and is then extremely docile, gentle, and caressing. It readily distinguishes the voice of its master, and will follow him like a dog. In the course of a very short time the *ichneumon* will free a house of all the rats and mice with which it was infested. It gives them no rest, but pursues them without intermission until they are extirpated. The quantity that it kills is much greater than what it devours, for unless strongly urged by hunger, it only eats the brain, and sucks the blood. When it is about to feed, it retires with its prey into some place of concealment; and

if any one approaches or attempts to take it away, it will growl at, and even bite him.

In Egypt the Ichneumon feeds usually on rats, serpents, birds, and eggs. The inundation of the Nile compels it to abandon the fields and take refuge in the neighbourhood of villages, where frequently it commits great depredations among pigeons and poultry. Yet the Egyptians are not much annoyed by these injuries. Their chief care, at this period, is the destruction of foxes, jackals, and larger animals of prey, which, at the rising of the water, also desert the plains. The ichneumons now thrown into the midst of cunning and powerful enemies, are destroyed in great numbers. This tends considerably to prevent their multiplication; but in Upper Egypt they have an enemy more formidable than any of these, in a large species of lizard, which subsists on the same kind of prey as the ichneumons, adopts similar artifices in procuring it, and is constantly found inhabiting the same furrows and channels as these quadrupeds.

The ichneumons are considered an highly useful race of animals in destroying the eggs of the crocodiles, and in thus happily checking the multiplication of these enormous reptiles. But the notions of the ancients that they attacked full-grown cocodiles, leaped down their throats, and devoured their intestines\*, are too absurd to obtain any credence in this enlightened age. M. Denon goes further: he says that the two animals have no occasion to quarrel; that they do not even inhabit the same parts; for that no crocodiles are found in Lower Egypt, nor any ichneumons in the upper country.

Much, says M. Sonnini, has been written, and many fabulous accounts have been related of the ichneumon. It was one of those animals which, among the ancient Egyptians, were held in superstitious reverence. Whilst living, it was entertained with great care, and, when dead,

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\* When the crocodile is fast asleep, with his mouth open, the Ichneumon spieth his advantage, and seeing him lie thus broad gaping, whippeth into his mouth, and shooteth himself down his throat as quick as an arrow; and then gnaweth his bowels, eateth an hole through his belly, and so killeth him!—*Holland's Translation of Pliny.*



had peculiar honours paid to it. Funds were, in many instances, appropriated for its support. It was usually fed on bread steeped in milk, or on the fish of the Nile cut into small pieces. If any one killed an ichneumon he was considered guilty of a heinous crime. The object of worship amongst a celebrated people, the supposed protector of a country the most singular in the world, against a scourge truly lamentable, we cannot be surprised that its history has been involved in obscurity, and that the most marvellous accounts should have been given respecting it. Even travellers have, till late years, been contented merely with seeing the animals. Disinclined to be at any trouble in examining whether the ancient traditionary notions were founded in truth or in error, they have successively copied the absurd relations which Pliny and others before them had given.

Fouche D'Obsonville had an ichneumon which he bred up almost from its birth. This animal became more familiar than a cat: it would on all occasions obey the voice of its master, and even follow him whenever he walked abroad. He one day carried to it a small water snake alive. Its first movements were strongly expressive of astonishment and rage; bristling all its hairs, it glided softly behind the reptile, and, in an instant, with wonderful celerity, sprang upon its head, which it seized and crushed with its teeth. This roused in the little animal the innate propensities of its species. Till that time it had lived in a court-yard, where a numerous flock of poultry was kept, without paying any attention to them whatever. But it one day afterwards strangled almost the whole of them. It ate very little, but had sucked the blood of several. The natural appetite that the ichneumons have for eggs, induces them frequently to scratch up the sand for those of the crocodile; and it is chiefly by this means that they oppose the multiplication of that reptile. The fable of their destroying the full-grown crocodiles, it is much too ridiculous to deserve any credit; and if these animals have sometimes been seen to spring upon the small crocodiles, it must be attributed to their natural inclination to pursue as food all kinds of reptiles, and by no means to any peculiar law of nature which impels them to retard their propagation.

## THE CIVET.

The name of *Civet* was unknown to the ancients. It is derived from an Arabic word signifying *perfume*; and it was no doubt originally employed in Europe to designate only the drug, which is produced by the Civet.—This drug has for many years been an object of considerable commerce. Its qualities in medicine have been highly spoken of; and, in former times, it was considered so delightful a perfume as frequently to be carried about the clothes of persons when full dressed. Civet is occasionally used in the present day, in the composition of medicines; but its consumption has been surprisingly diminished of late years. It is imported from India and Africa into the continental parts of Europe, chiefly by way of Alexandria and Venice; and sometimes the animals which produce it, are also imported as objects of curiosity. Cardon and Scaliger have had them in Italy; Agricola and Kentmann, in Germany; and our naturalist, Caius, in England. Belon informs us that he saw one at Alexandria: and afterwards, when the taste for natural history became more general, they were to be found in several of the menageries of Europe. The academicians of Paris dissected five; and Blasius, Swammerdam, Moraud, and Peyronie, each one. Still, however, it was not discovered that two species were confounded under the same name. Buffon was the first who distinguished them. He remarked that in one of these the tail was longer than in the other, and was neatly marked with black and white annules; whilst the other had a tail shorter and less various in colour: that the latter had likewise a kind of mane, capable of being erected and depressed, which the former had not, and that its muzzle was less sharp. To the species with a mane, he reserved the name of *Civette*; and to the other, with a long and annulated tail, he gave the denomination of *Zibeth*.

The civet measures two feet three or four inches in length, exclusive of the tail; and from ten to twelve inches in height at the shoulder. Its muzzle is somewhat less pointed than that of the fox, yet sharper than that of the martin. Its ears are rounded and short. Long whiskers ornament its lips. The thumbs or inner toes, particularly those of the hind feet, are much shorter than the



others. The hair with which its body is clad, is long, and somewhat coarse. That, particularly, which extends along the middle of the back, from the neck to the tail, forms a kind of mane which the animal has the power of erecting and depressing at pleasure; and which it always erects when irritated. The hairs of the tail are tufted, and those on the upper part are capable of being raised in the same manner as the mane. The general colour of the animal is a dark greyish-brown, varied with spots and interrupted stripes of blackish-brown. A band of the latter colour extends from the back of the head almost to the extremity of the tail. The sides of the body are marked with irregular spots, which are largest upon the rump and thighs. All the legs, as well as the posterior half of the tail, are of an uniform black brown. The base of the tail has three or four annules of the same colour. The head is whitish; but a brown band, after encircling the eye, descends along the cheek, and beneath the chin.

The substance is taken from the animals when alive in a domestic state, or it is collected from the rocks and shrubs on which the wild civet deposit it.\* It is easily ascertained when they have a superabundance, by the uneasiness which the animals shew, and a state of agitation that at other times is not observable. In order to collect it from them, they are seized by the feet, and a small spatula is introduced into the pouch which contains it. Their sweat emits also a musky kind of scent; and it has been said, but without any appearance of probability, that this is frequently mixed with the true civet, for the purpose of augmenting the quantity. The males yield more civet than the females; though the odour of the latter is said to be twice as strong as that of the former. This odour is insupportably powerful when the civet is fresh; and it is not until after a great while that it becomes so weakened as to be agreeable. Civets are fond of sugar, eggs, and small birds, but particularly of fish; and the better they are fed, the more profitable, a great deal, will be the perfume. The proprietors of these animals, in

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\* There is a civet in the Jardin des Plantes at Paris, which has been there several years. Its odour is at all times very powerful, but unusually so whenever it is irritated. It sleeps with its body rolled round, and its head between its legs. This posture it seldom changes either in the night or day; and it sleeps so soundly, that it cannot be roused without severe blows.—*Bingley*.

Lisbon, formerly made much money by them ; and in Amsterdam several were kept.

The native country of the civets appears to be the middle part of Africa, but they are not equally scattered over this. They are very abundant in Guinea ; and they are sometimes, though rarely, found in the south-west parts of Egypt.

#### THE SABLE

Is a native of North America, Siberia, Kamtschatka, and Asiatic Russia, and is about eighteen inches in length ; and, in its general shape, has a great resemblance to the martin. The head is longish, and the muzzle somewhat sharpened. Its colour is a deep glossy brown.

The natives of Kamtschatka catch these animals by the following stratagem : They follow the track of the sable, in snow-shoes, till they have detected his covert, which is generally a burrow in the earth. As soon as the little creature is aware of his pursuers, he escapes into some hollow tree, which the hunters surround with a net, and either cut down, or compel the animal by fire and smoke to abandon his retreat, when he falls into the net and is killed. They sometimes surround the tree in which a sable is lodged with dogs trained for the purpose ; and then, making a running noose on a strong cord, they get the creature's head into the snare, and thus haul him down an easy prey to their barbarity.

The skin of the sable is more valuable than that of any other animal of equal size. One of these skins has sometimes been valued at as high a rate as fifteen pounds ; but the general price is from one pound to ten pounds, according to the quality. The sable's fur is different from all others, in the hair turning with equal ease either way. The bellies of sables, which are sold in pairs, are about two fingers in breadth ; and are tied together in bundles of forty pieces, which are sold at from one to two pounds a bundle.



## LECTURE LVIII.

## QUADRUPEDS (CONTINUED)

## THE BEAR.

IN a native state bears are found in almost all the northern districts of Europe, Asia, and America. In some parts of Norway they are very numerous, and more particularly in the provinces of Berguen and Drontheim, than elsewhere. There are here two distinct varieties, one of which is of considerably smaller size than the other, and of much lighter colour. They are sometimes grey and have whitish spots, but it is doubtful whether this may not be owing to their being young animals, that have not attained their proper colour. Bears are also numerous in Florida, where the equally barbarous inhabitants make constant war against them for their skins as cloathing, and as articles of barter with European nations ; and their flesh as food.

The BROWN BEAR is a solitary animal, inhabiting the chasms and precipices, and frequently choosing for its abode the hollow of some tree ; there it lives for some months in the winter without provisions, seeming to exist on the exuberance of its former flesh, which it had acquired in the summer. The female generally prepares a bed in the hollow of a rock, and brings forth in winter.

The BLACK BEARS are common in Canada ; and inhabit those trees which are hollow at the top ; but when hunted, are forced from their retreats by setting fire to the tree ; by which means the old one generally issues out first, and is shot by the barbarous hunters ; and the young ones, as they descend, are caught in a noose, and are either kept or killed for provision.

The black bear is usually considered as much the least ferocious, and to subsist chiefly on vegetable productions ; whilst the other, the brown bear, will prey not only upon animals, but upon animal substances sometimes in a state nearly approaching to putridity. Sonnius relates that bears have been known, after battles, to approach the

scene of carnage, and dispute with wild dogs and hyænas the possession of the uninterred bodies.

In northern countries, these animals retire, about the beginning of October, into their dens or caves, where they prepare for themselves a bed of grass, leaves, and moss. Here they continue till the ensuing spring, in a state nearly of torpidity. They subsist through the whole winter, entirely without food; and do not, as many persons believe, support themselves by sucking their paws:

They make their bed beneath th' inclement drift;  
And, with stern patience, scorning weak complaint,  
Harden their heart against assailing want.

In some of the thinly inhabited districts of Greenland, bears are not only numerous, but occasionally very destructive. Whenever any of them are seen to approach the cultivated parts, the natives unite in pursuing them, in order to prevent the race from increasing in their neighbourhood, which they know would be very injurious to their flocks. As these animals are generally very ferocious when wounded, the hunters seldom venture to go out against them in parties smaller than four or five in number. They arm themselves with long spears, and are attended by dogs. The easiest and the safest way of destroying the animals is, however, said to be by intoxicating them with brandy, mixed with honey, which is one of their most favourite kinds of food.

Bears, says Mr. Bingley, are so numerous in Kamtschatka, that they are often seen roaming about the plains in great companies; and they would infallibly have long since exterminated all the inhabitants, were they not here much more tame and gentle than the generality of their species are in other parts of the world. In spring, they descend in multitudes from the mountains to the mouths of the rivers, for the purpose of catching fish. If there be plenty of this food, they eat nothing but the heads of the fish; and when, at any time, they find the fishermen's nets, they dexterously drag them out of the water, and empty them of their contents.

When a Kamtschadale espies a bear, he endeavours to conciliate its friendship at a distance, accompanying his gestures by courteous words. The bears are indeed so familiar here, that the women and girls, when gathering



roots and herbs, or turf for fuel, in the midst of a whole drove of these animals, are never disturbed by them in their employment ; and if any of the bears come up to them, it is only to eat something out of their hands. They have never been known to attack a man, except when suddenly roused from sleep. This humane character of the Kamtschadale bear, procures him, however, no exemption from the cruel and unsparing persecutions of mankind. His great utility is a sufficient instigation to the avarice of man, to declare eternal war against him. Armed with a spear or club, the Kamtschadale goes in quest of the peaceful animal, in his retreat ; who, meditating no attack, and intent only on defence, gravely takes the faggots which his persecutor presents to him, and, with them, himself chokes up the entrance to his den. The mouth of the cavern being thus closed, the savage hunter breaks a hole through the top, from which he transfixes his defenceless foe.

The modes that are adopted by the inhabitants of different countries, for the taking or destroying of bears, are very numerous. Of these, the following appear to be the most remarkable. In consequence of the well-known partiality of these animals for honey, the Russians sometimes fix to those trees where bees are hived, a heavy log of wood, at the end of a long string. When the unwieldy creature climbs up to get at the hive, he finds himself interrupted by the log ; he pushes it aside, and attempts to pass it ; but, in returning, it hits him such a blow, that in a rage he flings it from him with greater force which makes it return with increased violence ; and he sometimes continues this, till the poor animal is either killed, or falls from the tree.

Bears are so remarkably attached to each other, that the hunters never dare to fire at a young one, while the parent is on the spot ; for, if the cub happen to be killed, she becomes so enraged, that she will either avenge herself, or die in the attempt. If, on the contrary, the mother should be shot, the cubs will continue by her long after she is dead, exhibiting the most poignant affliction.

Buffon gives an interesting account of some bears brought up in a semi-domestic state at Berne, in Switzerland. These animals were kept in large square places,





W. Read. Sc.

*The Brown Bear, seizing his prey.*





dug out of the earth, and lined at the sides and the bottom with stones. Dens of masonry were formed in them, under the ground of the sides, having their pavement on a level with that of the open space. Their dens were each divided by a wall, and an iron grate, the latter of which was let down from above. In the middle of each square was left in the pavement, a hole sufficiently large to admit of a tree of considerable size being placed upright in it. There was likewise, in each square, a large trough filled with fresh water.

In 1740, two young bears were first brought here from Savoy. One of these, the male, broke his back, and was killed in August 1771, by falling from the top of the tree. When these animals had been here about six years, the female began to produce young ones. At the first litter, she had only one; and afterwards she produced from one to three, but never more than this number. When the young ones come into the world, although they are by no means ugly animals, they are very unlike their parents both in shape and colour. Their body is nearly round, and their snout is somewhat sharp-pointed: they are of a yellow colour with a white neck. No person who was a stranger to the animals, could even conjecture that they were the offspring of the bear. They continue blind for four weeks. At first they are about eight inches long from the muzzle to the base of the tail: by the end of three months, they measure fourteen or fifteen inches; and their hair is then about an inch long. Before they are full grown, they cast all their white and yellow hair, and assume a perfectly brown coat.

The squares in which these animals were first kept, having been in the middle of the town, it was found necessary to fill them up, and to place the bears in others that were made between the ramparts. The above-mentioned two animals were consequently separated, whilst they were conveyed into their new apartment. When they again met, they appeared to be quite in raptures; they raised themselves upright, and embraced each other with the greatest delight, to the great amusement of all the persons who were spectators.

After the death of the male, by his fall from the tree, the female was so much affected, that, for several days,



she refused to take any food. These animals were very fond of climbing into their tree, which was a green larch, placed there every year in the month of May. They would frequently amuse themselves by breaking pieces off the branches, particularly after the tree was newly planted. Their food was generally rye-bread, cut into large pieces, and soaked in warm water. They were also fond of all kinds of fruit; and whenever the country people, which was sometimes the case, brought unripe fruit to the market, the officers of the police had orders to seize such, and throw it to the bears. The animals, however, seemed on the whole to prefer greens and other esculent vegetables to most kinds of food. Whenever the female had young ones, the male was removed from her, lest he should destroy them. These were allowed to continue with their mother for ten weeks; after which they were separated, and fed for some time on milk and biscuits. The last litter that she produced was when she was thirty-one years old.

Two of the bears brought up in one of these open squares at Berne, were carried into France, and placed in one of the narrow lodges, in the Menagerie of the Garden of Plants, at Paris, where they had scarcely space enough to turn themselves round. The animals, thus cooped up, were fed on bread, fruit, and vegetables: but they appeared to suffer from the confined space. When they were first brought to the Menagerie, it was found very difficult to make them leave the cage in which they had been carried: they obstinately persisted in remaining there. To no purpose were various forcible means attempted; and in vain were numerous living animals placed before them, in the hope of enticing them out. They continued immovable; and it was not till after many hours of useless trial, that a living duck, placed at a little distance, tempted them to come forth. The natural disposition of these bears was gross; but they were by no means either mischievous or savage animals. They knew the voice of their keeper; and at all times shewed sufficient docility and obedience to his commands.

It is well known that the bear, though not without difficulty, may be rendered tame and docile; and he has then, at least, the appearance of being mild and obedient

to his master. He may be taught to perform various tricks, to entertain the multitude; but great cruelties are practised on the wretched beast, in training him for the purpose of this absurd exhibition.

#### THE WHITE OR POLAR BEAR,

Is the unhappy looking animal called the Sea Bear, which we observe in many of the travelling exhibitions of wild beasts, sitting in a somewhat upright position like a dog, with long shagged and dirty white hair. The space to which it is confined is in general insufficient to allow to the miserable beast the natural extension of its body. It is fed with flesh, and once or more in the course of every twenty-four hours, a quantity of water, in which salt has been dissolved, is thrown over its body, without which it is said the animal could not subsist. Although it is not strictly amphibious, yet such is the agility of its motion in the water, and such its power of continuing in that element, without fatigue, that it seems naturally connected with it; and whenever it is removed from thence it always gradually pines away till it dies.

As these animals inhabit exclusively the seas and sea-coasts of the extreme northern regions, they are supposed to pass the greatest part of their time on the ice. Along with this they are sometimes unconsciously floated to vast distances from the land. They have in this manner been occasionally conveyed into latitudes many leagues south of their native country; and not unfrequently into places where, deprived of a sufficient supply of food, they have at length perished with hunger.

These bears live in a state of continual warfare with all the species of seals, and with the arctic walrus, or sea cow, which they kill and devour upon the ice. The latter animals are, however, from their enormous tusks, frequently too powerful for the bears, and both have sometimes been known to die of their wounds.

Seals are often killed while sleeping on the ice; or are seized by the head, by the watchful bears, when they thrust it up through their breathing holes in the ice. Such, in short, is the voracity of these animals, that they are enemies to almost every thing living. The Greenlanders say, that they are occasionally known to seize upon rein-deer, hares, and even ptarmigans. They have been



known to devour the dead and putrid bodies of all kinds of animals, consuming every part except the skin, and sometimes even that. They also feed on the crow-berries, and on the whortle-berries, which, in several parts of Greenland, are very abundant. Unless they are hard pressed by hunger they seldom attack mankind.

It is stated by one of the German voyagers to Iceland, that his party happened to cross the track of a large white bear, which immediately pursued them. In a state of no inconsiderable alarm they endeavoured to frighten the animal by shouting and other noises; but in spite of all their efforts he ran directly at them. When he had arrived within a short distance, he was shot through the body with a musket. In a moment he rose upright on his hind feet, and was preparing to defend himself with fury, when a second shot laid him dead upon the ground.

Barentz, in his voyage in search of a North East Passage to China, had the most horrid proofs of the ferocity of the bear in the island of Nova Zembla: they attacked his seamen, seizing them in their mouths, carrying them off with the utmost ease, and devouring them even in the sight of their comrades. A few years ago, the crew of a boat belonging to a ship in the whale-fishery shot at a bear at a little distance, and wounded it. The animal immediately set up a dreadful howl, and ran along the ice towards the boat. Before he reached it, a second shot was fired, which hit him. This served but to increase his fury. He presently swam to the boat, and, in attempting to get on board, placed one of his fore feet upon the gunnel; but a sailor, having a hatchet in his hand, cut it off. The animal, however, still continued to swim after them till they arrived at the ship; and several shots were fired at him, which took effect: but on reaching the ship, he immediately ascended the deck; and the crew, having fled into the shrouds, he was pursuing them thither, when a shot laid him dead upon the deck.

While the Carcase frigate, which went out some years ago to make discoveries towards the North Pole, was locked in the ice, early one morning the man at the mast-head gave notice that three bears were making their way very fast over the frozen ocean, and were directing their course towards the ship. They had, no doubt, been in-





Neele & Son 352 Strand

## WHITE BEAR.

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vited by the scent of some blubber of a walrus that the crew had killed a few days before ; which had been set on fire, and was burning on the ice at the time of their approach. They proved to be a she bear and her two cubs ; but the cubs were nearly as large as a dam. They ran eagerly to the fire, and drew out of the flames part of the flesh of the walrus, that remained unconsumed, and ate it voraciously. The crew from the ships threw upon the ice great lumps of the flesh of the sea-horse, which they had still remaining. These the old bear fetched away singly, laid every lump before her cubs as she brought it, and dividing it, gave to each a share, reserving but a small portion to herself. As she was fetching away the last piece, the sailors levelled their muskets at the cubs, and shot them both dead ; and in her retreat they wounded the dam, but not mortally. It would have drawn tears of pity from any but unfeeling minds, to have marked the affectionate concern expressed by this poor beast in the last moments of her expiring young ones. Though she was herself dreadfully wounded, and could but just crawl to the place where they lay, she carried the lump of flesh she had fetched away, as she had done others before ; tore it in pieces, and laid it before them ; and, when she saw that they refused to eat, she laid her paws first upon one, and then upon the other, and endeavoured to raise them up : all this while it was pitiful to hear her moan. When she found she could not move them, she went off, and when she had got to some distance, she looked back and moaned. Finding this of no avail, she returned, and, smelling round them, began to lick their wounds. She went off a second time as before ; and, having crawled a few paces, looked again behind her, and for some time stood moaning. But still her cubs not rising to follow her, she returned to them again ; and, with signs of inexpressible fondness, went round, pawing them, and moaning. Finding at last that they were cold and lifeless, she raised her head towards the ship, and uttered a growl of despair, which the inhuman monsters returned with a volley of musket-balls. She fell between her cubs, and died licking their wounds !



## THE GLUTTON.

This animal is found in Siberia, and the north parts of America, where it is known by the name of the carcajou : its body is thick and long, and the legs short ; it is black along the back, and of a redish brown on the sides ; its fur is in the highest estimation, for its softness and beautiful gloss ; the tail is bushy and short.

It is seen lurking among the thick branches of trees, to surprise the deer, with which the extensive forests abound ; and when one of these happens to pass, the glutton immediately darts down upon it, sticks its claws between its shoulders, and remains there immoveably firm, eating its neck, and digging a passage to the great blood vessels that lie in that part. At length the deer, wounded, and exhausted by loss of blood, sinks to the ground ; and the glutton continues eating in the most voracious manner, till, incapable of any other animal function, it lies torpid by the side of its prey.

## THE RACoon.

It is about the size of a small badger ; its body is short and bulky ; the nose is rather shorter and more pointed than that of the fox : the fur is long and thick, blackish at the surface, and grey towards the bottom : the tail is thick, very bushy, tapering towards the point, and regularly marked with rings of black ; the fore-feet are much shorter than the hinder, and both are armed with five sharp claws. Though short and bulky, this animal is very active ; its pointed claws enabling it to climb trees with great facility, it runs on the trunk with the same swiftness that it moves upon the plain, and sports among the most extreme branches with equal ease and security. It moves forward chiefly by bounding, and, though it proceeds in an oblique direction, it has speed enough most frequently to escape its pursuers.

In the southern parts of America, and particularly in Jamaica, these animals are very numerous, and do immense damage to the plantations : but when tamed, they are equally harmless and amusing ; playful and cleanly ; it examines every corner, eats flesh either boiled or raw, eggs, fruit, corn, or insects ; and if left at liberty in a garden, will feed upon snails, worms, and beetles ; but is particularly fond of sweets of every kind, and to obtain these, in its wild state, it incurs every danger.

M. Blanquart des Salines had a racoon, of which he gave to M. de Buffon the following particulars :—" Before it came into his possession, it had always been chain-

ed. In this state of captivity it was very gentle, but exhibited little attachment to any one. The chain of this racoon was sometimes broken, and on such occasions liberty rendered him insolent. He took possession of an apartment, which he would allow none to enter; and it was with some difficulty that he could again be reconciled to bondage. When permitted to be loosed from confinement, however, he would express his gratitude by a thousand caressing gambols. But this was by no means the case when he effected his own escape. He would then roam about, sometimes for three or four days together, upon the roofs of the neighbouring houses; descend, during the night, into the court-yards; enter the hen-roosts, strangle all the poultry, and eat only their heads. His chain rendered him more circumspect, but by no means less cruel. When he was in confinement, he employed every artifice to make the fowls grow familiar with him: he permitted them to partake of his victuals; and it was only after having inspired them with the greatest notions of security, that he would occasionally venture to seize one of them, and tear it in pieces. Some young cats met with a similar fate.

He used to open oysters with wonderful dexterity. His sense of touch was exquisite; for, in all his operations, he seldom used either his nose or his eye. He would pass an oyster under his hind paws; then, without looking at it, search with his fore-paws for the weakest part; there sinking his claws, he would separate the shells, and leave not a vestige of the fish. Whatever dry food he ate, he used (as indeed the whole species do) to soften, or rather dilute, in water, by immersing it in the vessel that contained the water given for him to drink.

He was extremely sensible of ill-treatment. A servant, one day, gave him several lashes with a whip; and the man could never afterwards accomplish a reconciliation. Neither eggs, nor fish, of which he was exceedingly fond, could appease his resentment. At the approach of this servant, he always flew into a rage; his eyes kindled, he endeavoured to spring at the man, uttered the most dolorous cries, and rejected every thing that was presented to him, till the man quitted his presence.



## THE OPOSSUM

Has a long sharp pointed nose ; large, round, naked, and very thin ears ; small, black, lively eyes ; long stiff hairs on each side the nose, and behind the eyes : the hind part of the neck and back covered with hair two inches long ; the bottoms of a yellowish white, middle part black, ends whitish : the sides covered with hair of a dirty and dusky colour ; the belly with soft, woolly, dirty white hair ; the tail, for near three inches, clothed with long hairs like those on the back, then covered with small scales ; having a disagreeable appearance, like the body of a snake ; and with the same prehensile quality of that of some monkeys ; the body is round and thick, the legs short ; on the lower part of the belly of the female is a large pouch, in which the teats are lodged, and where the young shelter as soon as they are born. The length of the body is sixteen or seventeen inches, that of the tail fourteen.

This creature inhabits many parts of America and the East Indies. It is very destructive to poultry, and sucks the blood without eating the flesh ; it feeds also on roots and wild fruits ; and when pursued and overtaken will feign itself dead. It is not easily killed, being as tenacious of life as a cat. When the female is about to bring forth, she makes a thick nest of dry grass in some close bush at the foot of a tree ; and brings four, five, or six young at a time. As soon as the young are brought forth, they take shelter in the pouch or false belly ; and fasten so closely to the teats, that they cannot be separated without difficulty. They are blind, naked, and very small, when new-born, and resemble fetuses : it is therefore necessary that they should continue in that false belly till they attain proper strength and sight ; and are prepared to undergo what may be called a *second birth*. After this they run into the pouch as into an asylum in time of danger ; and the parent carries them about with her. During the time of this second gestation, the female shows an excessive attachment to her young, and will suffer any torture rather than allow this receptacle to be opened ; for she has the power of opening or closing it by the assistance of some very strong muscles.

If an opossum be pursued and overtaken, says Mr. Bingley, it will feign itself dead till the danger is over ; and, says M. du Pratz, it will not, when seized in this condition, exhibit signs of life, though even placed on a red hot iron ; and when there are any young ones in the

pouch of a female, she will suffer both herself and them to be roasted alive rather than she will give them up. These creatures never move till their assailant is either gone to a distance, or has concealed himself; on which they endeavour to scramble, with as much expedition as possible, into some hole or bush.

The FLYING OPOSSUM, a beautiful species, and clothed with fur of the most exquisite texture, is an inhabitant of New South Wales.

In length, from the tip of the nose to the root of the tail, it is twenty inches; the tail itself is twenty-two inches, at the base quite light, increasing gradually to black at the end: the head is like a squirrel's; the ears large and erect: the coat or fur of a rich and most delicate texture; appearing, on the upper parts of the body, at first sight, of a glossy black, but on a nicer inspection seems mixed with grey; the under parts white, and on each hip is a tan-coloured spot the size of a shilling; at this part the fur is thinnest, but at the root of the tail it is so rich and close that the hide cannot be felt through it. The fur is also continued to the claws. On each side of the body is a broad membrane (as in the flying squirrels), united to both the fore and hind legs.

#### THE KANGUROO

Was originally discovered in 1770, in New Holland, by some of the crew who accompanied Captain Cook in his first circumnavigation of the world. From the general form and structure of the kangaroo, there can be little doubt that its chief progressive motion must be by leaps: in these exertions it has been seen to exceed twenty feet at a time, and this so often repeated as almost to elude the swiftness of the greyhound, and with ease to bound over obstacles nine feet or more in height.

These animals have been known to measure nine feet in length, from the tip of the nose to the end of the tail; and to weigh a hundred and fifty pounds. The fore legs are seldom more than about nineteen inches in length; whilst the hinder ones are sometimes three feet and a half long. The hind legs, which are perfectly bare and callous beneath, are very strong; and, when sitting erect, the animal rests on the whole of their length. In its state of rest, it sits erect on the whole length of the hind feet, supporting itself by the base of the tail, which is very long, thick, and taperous, and occasionally used as a weapon of defence, being of such prodigious strength as to be able to break a man's leg at a single blow. The young ones, when first brought forth, are extremely diminutive; and in the early periods of their growth, they



most regularly reside in an abdominal pouch, that the female is furnished with, which conceals the teats, and serves as a receptacle to secure the young in time of danger.

The RAT-KANGUROO differs from the common species in being only of the size of a rabbit. The colour is brown, with long coarse hair, ash-coloured beneath; the ears are more rounded, and there are only four toes on the fore feet. On each side of the upper lip are several long whiskers, which are wanting in the great kangaroo; the head is rather flattened sideways, and the general appearance of the animal is far less elegant and pleasing.

Several kangaroos have been kept in England, and particularly in the royal domains at Richmond. These have produced young ones; and it is supposed that there would be little difficulty in naturalizing the species in this country.

#### THE PORCUPINE

Is about two feet long, and fifteen inches high. It is a mass of mis-shapen flesh, covered with prickly quills, from ten to fourteen inches long, resembling the barrel of a goose-quill in thickness, but tapering at both ends. These quills generally incline backward, like the bristles of a hog, but when the animal is irritated, they rise and stand upright. As to the rest of the animal's figure, the muzzle bears some resemblance to that of a hare; the legs are very short, and these, as well as the belly, the head, and all other parts of the body, are covered with a short hair like prickles.

This animal is a native of Africa, India, and the Indian Islands; and is said sometimes to be found even in Italy and Sicily. It inhabits subterraneous retreats, which it forms into several compartments; leaving two holes, one for an entrance, and the other, in case of necessity, to retreat by. It sleeps during the day, and makes its excursions for food (which consists principally of fruits, roots, and vegetables) in the night. Although able to support hunger for a great length of time, and apparently without inconvenience, it always eats with a voracious appetite. In the gardens near the Cape of Good Hope, these creatures do much damage. When they have once made a path through a fence, they always enter by the same path, so long as it continues open; and this gives the inhabitants an opportunity of destroying them.\*

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\* The late Sir Ashton Lever had a live porcupine; which he frequently turned out on the grass behind his house, to play with a tame hunting leopard and a large Newfound dog. As soon as they were





*The Porcupine.*





In its manners the porcupine is harmless and never the aggressor, but, when pursued, it climbs the first tree, where it remains till the patience of its adversary is exhausted.

Whenever these animals are irritated they stamp on the ground with their hind feet, and in this act they shake all their quills, but more particularly those about the tail; and at the same time makes a grunting noise. The usual method of defence adopted by these animals, is to recline on one side; and, at the approach of their enemy, to rise up quickly and gore him with their erected prickles. When the porcupine meets with serpents, against whom he carries on a perpetual war, he closes himself up like a ball, concealing his head and feet, and then rolls upon and kills them with his bristles, without running any risk of being wounded himself.

M. Le Vaillant says, that, owing to some pernicious quality in the quills, one of his Hottentots, who had received a wound in the leg from a porcupine, was ill upwards of six months. A gentleman at the Cape, in teasing one of these animals, received a wound in the leg, which nearly occasioned the loss of the limb.

#### THE FLYING SQUIRREL.\*

This animal is less than a common squirrel, and larger than a field mouse. Its skin is very soft, and elegantly adorned with dark fur in some places, and light grey in others. Its teeth are very sharp; its ears small; and its eyes black and sparkling. It is said to partake of the nature of the squirrel, the rat, and the dormouse; but that in which it is distinguished from all other animals, is in its peculiar conformation for taking those leaps that almost resemble flying. It is assisted in these surprising bounds by a peculiar formation of the skin, which extends from the fore feet to the hinder; so that when the animal stretches out its legs, this skin is spread out between them, somewhat like that between the legs of a bat; and the surface of the body being thus increased,

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let loose, the leopard and dog began to pursue the porcupine, which always at first endeavoured to escape by flight; but, on finding that ineffectual, he would thrust his head into some corner, making a snorting noise, and erecting his spines. With these his pursuers pricked their noses, till they quarrelled between themselves, and thus gave him an opportunity to escape.—*Bingley*.

\* For details of the English Squirrel, see Vol. III.



the squirrel keeps buoyant in the air until the force of its first impulse is expired, and it then descends.

These quadrupeds are more numerous in America than in Europe, but not commonly seen in either. Like the common squirrel, it inhabits the tops of trees, but is of a more torpid disposition, and frequently becomes the prey of the pole-cat, the martin, and other enemies. It may be easily tamed, but is apt to break away whenever it finds an opportunity. It does not seem fond of nuts, or almonds, like other squirrels; but is most pleased with the young sprouts of the birch, and the cones of the pine.

In Virginia, there is another of this species, called the hooded-squirrel: the lateral membrane begins at the chin and ears, where it forms a kind of hood, and extends, like that of the former, from the fore to the hind legs. Its body is a redish colour above, and of a yellowish ash beneath.

They are under the necessity of taking advantage of the lower branches of the trees to which they leap; for their weight prevents them from keeping in a straight line. Sensible of this, they always take care to mount so high as to ensure them from falling to the ground. This extended skin acts upon the air somewhat in the manner of a paper kite, and not by repeated strokes like the wings of a bird. The animal, being heavier than the air, must of course descend; the distance, therefore, to which it can jump, depends on the height of the tree on which it stands. When it is at rest, the skin is wrinkled up against its sides.

These animals are generally seen in flocks of ten or twelve together; and to persons unaccustomed to them, they appear at a distance, in their leaps, like leaves blown from the trees by the wind. "When I first saw them (says Catesby) in Carolina, I took them for dead leaves blown one way by the wind; but was not long so deceived, when I perceived many of them follow one another in the same direction."

They inhabit hollow trees; where they sleep during the day-time, and from whence they only make their appearance in the night, at which latter time they are very lively and active. They associate in flocks; several of them living in the same tree, which they never willingly

quit to run upon the ground, but almost constantly reside among the branches.

The EUROPEAN FLYING SQUIRREL is found in the woods of Lapland and Norway, where it feeds principally on the tender branches of the beech and pine trees.

The GREY SQUIRREL has plain ears; hair of a dull grey colour, mixed with black, and often tinged with dirty yellow; belly and insides of the legs white; tail long, bushy, grey, and striped with black: size of a half grown rabbit. It inhabits the woods of Northern Asia, North America, Persia, and Chili.

They are very numerous in North America, do incredible damage to the plantations of maize, run up the stalks and eat the young ears. They descend in vast flocks from the mountains, and join those that inhabit the lower parts; are proscribed by the provinces, and a reward of three-pence per head given for every one that is killed. Such a number was destroyed one year, that Pensylvania alone paid in rewards 8000*l.* of its currency. They make their nests in hollow trees, with moss, straw, wool, &c. feed on maize in the season, and on pine-cones, acorns, and mast of all kinds: they also form holes under ground, and there deposit a large stock of winter provision, and descend from the trees, and visit their magazines when in want of meat.

#### THE JERBOA.

This animal, remarkable for the singular construction of its legs, is found in Egypt, Barbary, and Palestine.

It is somewhat less than a rat; its eyes are large and full; the fore legs are only one inch in length, and are used as hands to convey victuals to its mouth; the hind legs are naked, and very much resemble that of a bird, having only three toes on each, the middle one longest; its tail is much longer than its body, and terminated with a black tuft, the tip of which is white; its hair is long and soft, of a redish colour on the back; the under parts of the body are white: across the thighs there is a large black band, in the form of a crescent.

The motions of the jerboa are similar to those of the kangaroo. It goes forward very nimbly on its hind feet, taking leaps of five and six feet from the ground. It is a lively, harmless animal, lives entirely on vegetables, and burrows in the ground like a rabbit. It is fond of warmth, making its nest of the finest and most delicate herb-



age; and seems sensible of the approach of bad weather by wrapping itself up close in hay, with its head between its thighs. It sleeps during winter without nourishment.

The sands and rubbish which surround Alexandria are much frequented by jerboas, where they live in troops; and, in digging the ground, are said to penetrate even through a stratum of softish stone, which is beneath the layer of sand. These animals are very shy and restless. It is almost impossible to kill them, except when taken by surprise. The Arabs catch these jerboas alive, by stopping up the outlets to the different galleries belonging to the colony; one excepted, through which they force them to issue from the ground.

Jerboas walk on their hind legs, their fore legs being very short; and at the approach of danger, they immediately take to flight, in leaps six or seven feet high, which they repeat so swiftly, that a man on horseback can scarcely overtake them. They jump first to one side, and then to the other, till they find either their own burrow, or some neighbouring one. In leaping, they stretch out their tails; but in standing or walking, they carry them in the form of an S. If surprised, they will sometimes go on all-fours; but they soon recover their attitude of standing on their hind-legs, like a bird. When undisturbed, they use the former posture; they then rise erect, listen, and hop about like a crow. In digging or eating, they drop on their fore legs; but in the latter action, they often sit upright like a squirrel.

The Siberian jerboas, says Sonnini, are so tender, that it is very difficult to transport them into other climates; but, as an indispensable precaution to those who attempt it, he advises that they be closely shut up in strong cages, or in other conveniences, without any possibility of escape; for their natural disposition inciting them to gnaw whatever comes in their way, they may occasion considerable damage to a ship in the course of her voyage; and, being able to eat through the hardest wood, may even endanger her sinking.





*The Jerbo.*

*The Kangaroo.*





## THE CAMEL TRIBE.

In hot and sandy regions the Camel Tribe are employed as beasts of draught and burden. Their pace is usually slow ; but, being able to sustain themselves, even on the longest journeys, with a very small portion of food, and to undergo fatigues which few, perhaps no other animals, could endure, some of the species are an invaluable acquisition to the inhabitants of the districts where they are found.

They are furnished with four stomachs, consequently they not only live solely on vegetable food, but ruminate or chew the cud. They swallow their food unmasticated, which is received into the first stomach, where it is macerated : and, when the animal is at rest, by a peculiar action of the muscles, it is returned to the mouth in small quantities, chewed more fully, and then swallowed a second time for digestion.

The external conformation of camels has something unpleasant and forbidding. Their heavy pace, the length and curvature of their neck, their cloven lip, the protuberance of their eyes, the apparent weakness of their hinder parts, and the large fatty lumps which disfigure their back, render their appearance in some measure even hideous.

There are two principal species, of each of which there are likewise several varieties. The first was known to the ancients by the name of BACTRIAN CAMEL ; and the other by that of ARABIAN CAMEL. The latter is likewise called DROMEDARY, from the Greek word *δρομας*, which signifies a *courier*. As to the name of Camel *καμηλος*, it is the same as that by which the animal is now known in the oriental countries.

## THE TURKISH OR BACTRIAN CAMEL

Is distinguishable at first sight by the two lumps on the upper part of its body. One of these, which is situated on the shoulders, usually falls somewhat on one side when the animal is fat, and the other, which is situated at a little distance behind, is generally upright. This species is usually larger than the dromedary ; its legs are shorter in proportion to the size of its body, its pace is more slow, its muzzle larger and more swollen or inflated, and its hair more brown.

The Bactrian camel is, at the present day, found in the same places where it was observed by the ancients,



namely in Usbec Tartary, which was the ancient Bactria. It is likewise found in Thibet, and near the frontiers of China. Professor Pallas assures us, that there are in the neighbourhood of China, wild camels, which are larger and much more courageous than those bred up in confinement.

The animals of the present species are exclusively employed as beasts of burthen throughout the whole of these regions. They are capable of supporting even a more rigorous climate since the Mongol Tartars have conveyed them even to the environs of the lake Baikal, in Siberia, where they subsist, during winter, on the bark and tender branches of the birch and other trees ; a kind of food on which, however, they become lean and much emaciated. On the contrary, in the southern parts of Persia, in Arabia and Egypt, the camels employed in labour are those which have only a single hunch ; whilst those with two hunches are reared merely as objects of curiosity.

The Bactrian camels are in every respect better adapted to live in temperate climates than the dromedary ; and particularly it has been remarked that they are much better able to pass through humid and marshy countries than these.

It is said that the Bactrian camel, when irritated, will sometimes seize a man in its teeth, and, forcibly throwing him upon the ground, will trample him to death with its feet. If, however, the clothes that the man wore he put in its way, the animal is contented by venting its fury on these, and the offender may then, without any risk of injury, approach it as usual. It is in the rutting season that the camel is most furious, and at that time the slightest irritation will provoke it almost to madness.

Camels kneel down both to be loaded and unloaded. Their baggage is fastened to a kind of saddle ; and one man is able to conduct five or six camels. Most other beasts of burthen, such as horses, mules, &c: will travel and live with camels. The camel and the ass may sometimes be seen employed in the same work. The antipathy, therefore, which has been supposed to exist betwixt camels and other quadrupeds is unfounded.

In the Menagerie of the Museum of Natural History at Paris, there were two Bactrian camels, which were

supposed to be about forty-four years old. They were both males, and were about six feet and a half in height, at the shoulder. They were sometimes employed in drawing a chariot, but as they had been long out of the habit, they were never employed in labour. They consumed every day about thirty pounds weight of hay or lucern, but were not allowed any oats. The camel costs no more for its support than a horse, although it is a much stronger and more powerful animal. When these animals ruminate, they macerate their food alternately on each side of their mouth, never doing it twice successively on the same side. During the summer they each drank four pails of water every day.

Camels delight in lying down and rolling themselves in the dust. During the season just mentioned they are almost constantly employed in rubbing themselves against different objects, and particularly their head. They carry their noses near the ground, like hounds when on scent after any animal they are pursuing. They sleep with their eyes open.

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## LECTURE LIX.

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### QUADRUPEDS (CONTINUED)

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#### THE DROMEDARY, OR SINGLE-HUNCHED CAMEL.

This animal was known to the ancients by the name of the *Arabian Camel*; at least it was so called by Aristotle and Pliny, in contradistinction to that with two hunches, which they denominated the *Bactrian Camel*. The Arabians have employed it from time immemorial, and have conveyed it into all the different countries where they have established themselves; namely into Syria, Babylon, and into all the countries which extend along the boundaries of Africa, from Abyssinia to the kingdom of Morocco.

Dromedaries are from five to seven feet in height at the shoulder. Their hunch or lump is situated on the middle of their back; it is



rounded and permanent, during their whole life. Their muzzle is less inflated than that of the camel: their hair is soft, woolly, and very unequal: it is longer on the nape, under the throat, and on the hunch, than on any other parts of their body. Whilst they continue young, its colour is a dirty white; but that of the adult animals is a reddish grey, of a tint more or less dark. Like the camels they have naked callosities on the upper parts and knees of all the legs, and one much larger than any of the others, on the breast. It is on these callosities that the dromedaries lie down, and M. de Buffon has asserted that they are gradually produced by the contusions which the animals receive against the ground.

Of all domestic animals, this is by far the most important and necessary in the countries inhabited by the Arabs. If the dromedary did not possess an astonishing degree of temperance; if it had not the power of supporting thirst for a great length of time, and of traversing with rapidity immense distances, over deserts covered with a deep and burning sand, there could be no communication whatever between Egypt and Abyssinia, between Barbary and the countries situated beyond the great desert, between Syria and Persia; and Arabia Felix would be perfectly insulated from the rest of the world. The Moors, in their extensive deserts, rear a great number of these animals; and they are the only kind that is known throughout the whole western part of Africa.

The larger kinds of dromedaries are able to carry a weight of from seven hundred to a thousand or twelve hundred pounds; and thus loaded they will travel upwards of ten leagues in a day. The lighter animals, which are bred for the course, and which do not carry burthens, will even travel thirty leagues, in this time, if the country is level and dry.

They are prepared for the course by being trained to run with horses from the earliest possible period of their lives. The Moorish horses are very quick in their paces, and, in a race with dromedaries, they always gain ground considerably at the beginning. After some hours, however, the horse becomes exhausted with fatigue: he is obliged by degrees to slacken his pace, and finally to stop. The dromedary pursues his route, and is capable of continuing his exertion for nearly twenty-four hours; and he can resume this three or four successive days. On these occasions he is fed with balls formed of a paste of









millet mixed with gum. Each animal commonly receives three of these balls in the morning, and three in the evening, the weight of which in the whole is only about two pounds. This scanty supply of food, a kind which is seldom employed except on such extraordinary exertions, is sufficient for the support of the animal during the whole twenty-four hours, and sustains all his faculties in full vigour. The dromedaries employed in conveying burthens are each led only by a simple halter; but those that are used for the course, and are necessarily mounted, are guided from the back, and have a ring or buckle passed through the skin above the nostrils, where it always remains: and to this are affixed the reins by which the motions of the animal are regulated. The Arabs frequently put on the backs of the dromedaries a kind of osier frames, covered with linen, and by means of these they are able to convey their wives and children, in their migrations from one habitable part of the desarts to another.

Dromedaries as well as camels are altogether useless in rocky and mountainous countries, but particularly in such as are wet or marshy. The humidity makes their legs swell, and is frequently the cause of their suddenly falling. Both the species, however, will travel for eight or ten days successively, over arid desarts, supported only by the few dry and splenous plants which are there produced. When the journey is continued for a longer time than this, it is necessary, in order to keep the animals in good condition, to feed them also with barley, beans, or a small quantity of dates; or a few ounces, every day, of a paste made with the flour of millet mixed up with gum, already mentioned.

The dromedary, according to the accounts of most travellers, can pass seven or eight days without drinking; but Leo Africanus says fifteen. After an abstinence so long, it is able to smell water at an astonishing distance; and if there happens to be any within reach, it will run towards it with great rapidity long before any one can see it. This faculty the animal possesses even in repose, if water has been kept from it for any considerable length of time.

As soon as the dromedary is about a month old, its owner commences its education. It is separated from its



mother, whom it is now only suffered to approach at certain hours in the day. A portion only of the milk which nature has destined for its support is allowed, and thus from its earliest infancy it is accustomed to some of those hardships which of necessity attend the remainder of its progress through life.

Shortly afterwards it is made to kneel down at command : its legs are forcibly bent under its body, and it is placed in exactly the same situation that it is compelled to adopt when, in after life, it receives and discharges its burthen.—(*See the Engraving.*) The owner covers its body with a carpet or a piece of a tent, by which only its head and neck are left at liberty ; and in order to confine it in such manner that it cannot, by any force of its own, move from the place, a great number of heavy articles are put on the borders of the covering. The animal, with very few intervals of relaxation, passes nearly four months in this cruel state of confinement : but the effect of so rigid a discipline is, that the recumbent posture afterwards becomes habitual to the animal.

When they have undergone this punishment, the young animals are all put together into a park or large inclosure, where they are fed by children twice a day, on dromedary's milk diluted with water. The animals soon begin to know the children employed to feed them, and they assemble round them whenever they appear. The children carry in one hand the vessel that contains the food, and in the other a slight switch, which they strike against the thighs of the young animals.

On receiving this notice, they immediately lie down ; and, after a little while, the practice becomes so habitual to them, that they put themselves into their usual posture at only a signal from the switch. In short, the obedience with which the dromedary adopts this attitude on the slightest notice from its master, and which obedience it retains during the whole of its life, is a circumstance truly admirable.

The dromedary, like the camel, has three paces, viz. the walk, trot, and gallop. The first is what horse-dealers would denominate a rolling walk. The animal advances by lifting, almost at the same instant, both his legs on one side, and afterwards both those of the other.





*The Camel in his recumbent posture.*





This pace is exceedingly fatiguing to persons who are not accustomed to it ; and nothing but long practice can render it endurable.

At this pace a dromedary can easily travel from thirty to forty miles in a day, by proceeding only six hours in the morning, and four in the afternoon ; and appropriating the remaining fourteen hours to rest. The equality of pace, and its diminution or increase amongst the whole of the dromedaries on a journey, are entirely regulated by the conductors ; and obedience to the voice of their leader is a capital point in the education of these animals, whose whole life is passed in extensive travels.

They are fond of music, and it is chiefly by means of this that they are managed. They increase or slacken their pace, according to the song of the camel-driver, who is always stationed at the head of the caravan. They follow each other, with a pensive and melancholy air, without ever quitting their regular direction ; and they pay great attention to the cadence of the driver's song, who, when he wishes to slacken their pace, diminishes the measure of his tune. Sometimes, when occasion requires it, the animals are roused by a few notes rather louder than ordinary, or by a slight whistling, and instantly these trivial notifications are understood and obeyed.

To any person unaccustomed to it, the motion of a dromedary is insupportable. Golberry says, " One ought, indeed, to be either an Arab or a Moor, to be able to ride this animal for any distance, while going at a trot. For my part, I could not support the torment of it for a quarter of an hour ; all my bones felt as if they were dislocated, and my curiosity was even followed by an attack of a fever. It is impossible to form an idea of any jolting more harsh or intolerable. I had the utmost difficulty to keep my seat upon the animal, when going at a quick trot."

He informs us that the Moors and Arabs, when their dromedaries go at this pace, are generally mounted, four at a time, on one animal. They face each other in pairs, and will in this manner perform journies of from sixty to seventy miles in a day, and continue to proceed at the same rate, for four or five days successively. These animals, when properly educated and trained, will perform



a rude kind of dance to the sound of musical instruments. Dromedaries are very gentle at all times, except during one particular season of the year, when they generally become furious. It is said that, at this period, they recollect all the ill treatment they have previously received, and that they seldom fail to revenge themselves on the persons who inflicted it, if they now come within their reach. They kick, bite, and sometimes even trample men under their feet. They now almost entirely refuse their food for about forty days; and there appears on the posterior and upper part of the head, behind the ears, two elevations of the skin, forming a kind of core, from the pores of which a thick fluid continues to ooze during the whole season. Two large bladders are thrown at the same time from the mouth, attended by a very disagreeable rattling in them.

The flesh of the young dromedary is as good as veal. The Arabians make it their principal food; and they frequently preserve it for a considerable length of time, in vessels which they cover over with fat. These people are likewise very fond of the milk, which is thick and nourishing, and from which they prepare both butter and cheese.

The hair of the dromedary is employed in the manufacture of various kinds of stuffs, and for several other purposes. The animals are shorn in the summer: even the dung is of essential use in the arid countries which they inhabit: it constitutes the chief combustible substance that the people possess; and, when properly prepared, it yields a considerable quantity of sal ammoniac.

The dromedaries, from time immemorial, have formed a principal part of the riches of the Arabian shepherds; and from the number of the animals they possess, is estimated the extent of their riches.

Two dromedaries were kept a few years since in the Museum of Natural History at Paris. The male ate about thirty pounds weight of hay every day, and the female about twenty. They drank often. The female was very gentle, but the male somewhat mischievous; and he attempted to crush those who offended him against the wall or against the partition of his inclosure. He was sometimes employed in a machine for pumping water, and he performed his work very well. On the days

that he was thus employed, he had either a few oats or some bran given in addition to his hay.

“ Of all animals (says Buffon) that man has subjugated, the camels are the most abject slaves. With incredible patience and submission, they traverse the burning sands of Africa and Arabia, carrying burdens of amazing weight. The Arabians consider the camel as a gift sent from Heaven ; a sacred animal, without whose assistance they could neither subsist, traffic, nor travel. The milk of the camel is their common food. They also eat its flesh ; and of its hair they make garments. In possession of their camels, they want nothing, and have nothing to fear. In one day they can perform a journey of fifty leagues into the desert, which cuts off every approach from their enemies. All the armies in the world would perish in pursuit of a troop of Arabs. By the assistance of his camel, an Arab surmounts all the difficulties of a country which is neither covered with verdure, nor supplied with water. Notwithstanding the vigilance of his neighbours, and the superiority of their strength, he eludes their pursuit, and carries off with impunity all that he ravages from them. When about to undertake a predatory expedition, an Arab makes his camels carry both his and their own provisions. When he reaches the confines of the desert, he robs the first passengers who come in his way, pillages the solitary houses, loads his camels with the booty, and, if pursued, he accelerates his retreat. On these occasions he displays his own talents as well as those of the animals. He mounts one of the fleetest of them, conducts the troop, and obliges them to travel day and night, almost without either stopping, eating, or drinking ; and, in this manner, he often performs a journey of three hundred leagues in eight days.”

The flesh of the camel, says Mr. Bingley, is dry and hard, but not unpalatable. It is so much esteemed by the inhabitants of Egypt, that in Cairo and Alexandria, it was, not long ago, forbidden to be sold to the Christians. In Barbary, the tongues are salted and smoked, for exportation to Italy and other countries, and they form a palatable food. The hair is an important article of commerce, serving for the fabrication of the tents and carpets of the Arabs ; and leather is made of the skin. In the materia medica of China, the different parts of the



camel occupy a conspicuous place : the fat is called the oil of bunches ; and the flesh, the milk, the hair, and even their dung, are admitted into the prescriptions of the Chinese physicians.

#### THE THIBETIAN MUSK

Inhabits the highest and rudest mountains of Thibet, and other parts of Asia. In the autumn large flocks of them assemble to migrate southward, when the barbarous peasants lie in wait for them, and either catch them by means of snares, or kill them with arrows and bludgeons. Their activity is surprising, and they take astonishing leaps over the tremendous chasms of the rocks. They tread so lightly on the snow, as scarcely to leave a mark ; while the dogs that are employed in the pursuit of them sink in, and are frequently lost.

The Thibet musk has a bag or tumour on the belly near the navel, and a very short tail almost hid in the fur. The length of the male is about three feet three inches from the nose to the origin of the tail, and about two feet three inches high at the shoulder ; the female is less than the male, has a sharper nose, no tusks nor musk-bag, and has two teats. The head resembles that of the roe : the fur is coarse, like that of the deer ; but softer, very smooth, erect, plentiful, thick, and long : the colour varies according to the age of the animal, and time of the year ; but is chiefly blackish brown on the upper, and hoary, seldom white, on the under parts of the body ; the hoofs are long, black, and much divided, and the spurious hoofs of the fore feet are very long.

The Tungusi shoot them with bows and arrows. The skins are used for bonnets and winter-dresses. The Russians often scrape off the hair, and have a way of preparing them for summer cloathing, so as to become as soft and shining as silk. The noted drug the musk is produced from the male. The bag or follicle that contains it is situated near the prepuce ; and is of a somewhat oval figure, flat on one side and rounded on the other, having a small open orifice. In young animals this bag is empty ; but in adults it is filled with a clotted, oily, friable matter, of a dark brown colour : this is the true musk, of which each bag contains from a dram and a half to two drams. The best comes from Thibet ; that which is produced in Siberia having somewhat of the flavour of castor. These animals are found in Eastern countries, in

such numbers, that M. Tavernier informs us, he collected, in one journey, no fewer than 7673 musk-bags.

#### THE ELK

Varies considerably in size, according to the climate where it is found, and in some parts is truly gigantic; but, in general, the full-grown animal is about the size of a common horse. It is an animal rather of the buck than the stag kind, as its horns are flat towards the top, often very large, and its common pace is a quick shambling trot, during which the hoofs clatter like those of the rein-deer. It inhabits only the colder countries; and is generally found much larger in Asia and America than in Europe. Its disposition is timorous and gentle; content with its pasture; and never inclined to disturb any other animal, when supplied itself. The elk is very swift, and will travel fifty German miles in one day; his flesh is excellent, and his skin proof against musket-ball.

These quadrupeds subsist principally upon grass in summer, leaves in autumn, and the bark of trees in winter. When the whole country is covered with snow, they herd together under the tall pine-trees, strip off the bark, and remain in that part of the forest, while it affords them a sufficient supply.

In 1777, an Indian, at the Factory at Hudson's Bay, had two elks so tame, that, when he was on his passage to Prince of Wales's Fort, in a canoe, they always followed him along the bank of the river; and when he landed, they generally came and fondled on him, and never attempted to stray from the tents.\* He one day crossed a deep bay in one of the lakes, in order to avoid a very circuitous route along its bank, and expected the elk would, as usual, follow him round: but not arriving at night, and the howling of wolves being heard in the quarter where they were, it is supposed they were devoured by those voracious beasts, for they were never afterwards seen.

#### THE REIN-DEER.

Of all animals of this kind, the rein-deer is the most extraordinary and the most useful. It is a native of the icy regions of the North, and admirably adapted to the necessities of that hardy race of mankind who live near

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\* Mr. Livingstone, president of the New York Society, had two of these animals, which, though only bitted twice, were quiet in harness, and perfectly docile.



the pole. To the natives of Lapland and Greenland it affords most of the advantages of the horse, cow, and sheep; conveying them and their scanty furniture from one mountain to another; yielding them wholesome milk; and furnishing them with a warm though homely clothing.

It is lower and stronger built than the stag; its hair is much warmer and thicker; and its horns proportionably larger, branching forward over its eyes, and palmated towards the extremities. When the animal first sheds its coat, its colour is brown; but as summer approaches, it begins to grow light, and varies until it becomes nearly grey. The horns of the female are like those of the male, except that they are smaller and less branching. The pace is rather a trot than a bounding, and this it can continue for a whole day; its hoofs are cloven and moveable, so that it spreads them abroad as it goes, to prevent its sinking in the snow; and as they move they are heard to crack with a loud noise. The females do not begin to breed till they are two years old; but then they regularly breed every year till they are superannuated.

It is said that, with a couple of reindeer yoked to a sledge, a Laplander can travel 112 English miles in a day. The Laplanders say, that they can thrice change the horizon in twenty-four hours; that is, they can three times pass that object, which, at their setting out, they saw at the greatest distance their eyes could reach. The sledge is formed like a boat, with a back-board for the rider to lean against. The traveller is tied in it like a child in a cradle: he manages his carriage with great dexterity, by a stick with a flat end, to remove stones or any obstructions he may meet with. To the peak in front a thong is fixed, which yokes the rein-deer. A piece of narrow leather tacked to the reins of the bridle over the animal's head and neck form the bit; and from the breast a leathern strap, passing under the belly, is fastened to the front part of the sledge.

When the Laplander enters the sledge he takes the rein or halter fastened to the rein-deer's head, and fastens it to his right thumb. When the driver is ready to start, he shakes the rein, and the animal springs forward with great speed. He directs the course of the deer, by pulling the rein on the side he would have him go; and encourages him with his voice. It is for this purpose that the love-songs of the Laplanders are generally composed;

and among these are found some original specimens of the poetry of a rude and uncivilized nation.

The Laplanders are thus enabled to travel in winter by night and day, when the earth presents one entire surface of snow, and not a single vestige of human industry is to be seen to direct their way, whilst the snow is flying in all directions. They, however, have no difficulty in finding the spot to which they are bound, and very seldom meet with any accident. They affix bells to the harness of the rein-deer, in order that they may be kept together by hearing, when they cannot see each other, after the light of their short day fails them. The Missionary Leems, who resided ten years among this people, remarks, that during the whole of that period he did not remember more than one fatal accident having resulted from this mode of travelling.\*

The principal food of these animals during winter is a white moss or lichen, with which most of the desert parts of the country are covered like snow, and which the deer easily turn up with their noses, even when it is deeply buried in snow. Sometimes, however, though but rarely, the winter commences with rain, and a frost ensuing, covers the whole country with a complete crust of ice. In this case, the rein-deer and also their owners are undone; for having not provisions laid up in case of accident, and as they can only obtain a scanty supply from the pine trees, covered with moss, the greatest part of the herd commonly perish, without any possibility of assistance.

#### THE GIRAFFE, CAMELEOPARD,

Is found only in the interior recesses of forests, or upon the wildest plains of Africa; whence it is never taken alive, except when young, and where it is seldom even seen by European travellers.

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\* In 1822 a beautiful specimen of the rein-deer was imported into England, and with a Laplander and his family was exhibited for some months to immense crowds of visitors at Mr. Bullock's spacious rooms in Piccadilly. In 1786, Sir H. G. Liddell, Bart. brought with him five rein-deer, which he kept at Eslington Castle in Northumberland. They bred, and there was every prospect that they would succeed and even become prolific; but, unfortunately, some of them were killed, and others died in consequence of a disorder similar to the rot in sheep.—*Bingley*.



The cameleopard exhibits the slender shape of the deer or camel, but is destitute of their symmetry and easy power of motion. The head resembles that of the deer, armed with two round horns; its neck, that of a camel; and its leg and feet those of the deer, but remarkably different in the fore legs, being nearly twice as long as the hinder; this is merely occasioned, however, by the extraordinary height of the shoulders compared with the thighs. The tail is round, tapering, and terminates in a tuft of long hair. Its height, when full grown, from the fore feet to the top of the head, is about seventeen feet; the skin is beautifully spotted with brown upon a whitish ground; and the animal, standing still, and viewed by a spectator in front, resembles the trunk of a withered tree; the hinder parts being entirely concealed. Its gait in walking is neither awkward nor unpleasing, but it has a ridiculous kind of trot. Its defence is in its heels, and its kicks are so extremely rapid, that they defend it against the lion, though not from the impetuous attack of the leopard or tiger. Like all other horned and cloven-footed quadrupeds, it ruminates and feeds entirely upon vegetables; but its favourite food is the leaf of a tall kind of sensitive plant, peculiar to the interior of Africa.

#### THE CHAMOIS,

So justly admired for its elegance and bounding vivacity, is found only in rocky and mountainous places; particularly in Dauphny, Piedmont, Savoy, Switzerland, and some parts of Germany.

This animal is about the size of a domestic goat, with hair like a doe; in spring it is of an ash colour, in autumn a dun, inclining to black, and in winter a dark brown. It is furnished with two beautiful black horns, rising from the forehead, almost between the eyes, and bending backward in a graceful circle, near the extremities; the ears are elegantly placed near the horns; and the eyes are round, sparkling, and strongly express the animal's warmth of constitution. The flesh is well tasted, and a single animal sometimes yields ten or twelve pounds of suet, superior to that of the goat.

These quadrupeds are naturally peaceable and sociable; being found in flocks of from four to eighty or a hundred, dispersed upon the crags of the mountains. The large males, however, are generally seen feeding detached from the rest, except during the season of love, which is October and November.

When alarmed, the chamois makes a hissing noise with such force, that the surrounding rocks and forests re-echo to the sound; the note being very sharp at first, and be-

coming deeper towards the close. Having paused a moment, the animal looks round, and perceiving its apprehensions to be well founded, it resumes its hissing, with increasing violence ; at the same time striking the ground with its fore feet, bounding from rock to rock, and evincing great agitation, till the alarm is spread to a very considerable distance, and the whole flock provide for their safety by a precipitate flight. The hissing of the male is much louder than that of the female ; it is performed through the nose ; and is, strictly speaking, no other than a very strong breath driven violently through a small aperture. Heat is so extremely disagreeable to these animals, that they are never seen during summer, except in the excavations of the rocks, amidst fragments of unmelted ice, or under the shade of those rough and hanging precipices, which face the North, and effectually keep off the rays of the sun.

#### THE NYL-GHAU

Is seldom found wild in the British settlements of India. Such animals as are seen there have been brought from the distant interior parts of the country.—Bernier mentions them in his travels from Delhi to the province of Cachemire. He describes the emperor's amusement of hunting them, and says that sometimes great numbers of them are killed. In several parts of the East they are considered as royal game, and are only hunted by the princes.

The height of the Nyl-ghau is somewhat more than four feet at the shoulder. The male is of a dark grey colour, and furnished with short blunt horns, that bend a little forward. There are white spots on the neck, between the fore-legs, on each side behind the shoulder joints, and on each fore foot. The female, which is destitute of horns, is of a pale brown colour, with two white and three black bars on the fore-part of each foot, immediately above the hoofs. On the neck and part of the back of each is a short mane ; and the fore-part of the throat has a long tuft of black hairs.

These animals are frequently brought from the interior parts of Asia, as rare and valuable presents to the nabobs and other great men, at our settlements in India. The first of this species that were brought into England were a male and female, sent from Bombay to Lord Clive, in 1767. They bred every year.



## THE ANTELOPE,

Is found in the northern parts of Africa and India, is well known to the English, from whom it received its name ; is about the size of the roe-buck, but the horns are differently formed, being about sixteen inches long, almost touching each other at the bottom, and spreading as they rise, so that their tips are sixteen inches asunder. Like others of the same kind, the antelope is brown on the back, and white under the belly ; but these colours are not separated by the black streak which is to be found in all of the like species.

These animals chiefly confine themselves to countries where there are salt springs ; for on the plants that grow near these, and on salt, they principally feed. While feeding they frequently walk backward and pluck the grass on each side. Towards the end of autumn they collect in flocks of some thousands, and retire into the southern deserts. In spring they divide again into little flocks, and return to the north.

The GAZELLA, Kevil, Corin, Guib, Grimme, Meminna, and Condoma, are animals distinguished by the common appellation of Antelopes, and form an intermediate link between the goat and the deer ; agreeing with the former in the texture of their horns, which have a core in them, and are never cast ; and with the latter in elegance of form, and extraordinary fleetness. They inhabit the hottest parts of the globe, or parts of the temperate zone so near the tropics as to form a double climate. They are very numerous in Asia and Africa ; of a most light and elegant make ; a restless and timid disposition ; remarkably agile ; and in most of their boundings so light and elastic, as to strike the spectator with astonishment.

THE WILD GOAT (*Ibex*.)

This animal is principally found on the Alps, the Pyrenees, and the highest mountains of Greece.

The male is larger than the tame goat, but resembles it much in appearance. The head, in proportion to the body, is small. The eyes are large, round, and brilliant. The horns are large, weighing sometimes sixteen or eighteen pounds, and measuring from two to four feet in length : they are flatted before, round behind, and divided by several transverse ridges ; are bent backward, and of a dusky brown colour. The beard is long, the legs are slender, and the body is short, thick, and strong. The tail is short, and naked beneath. The hair is long, and of a brownish or ash-colour, with a streak of black running along the back. The belly and thighs are of a delicate fawn-colour. The female is

about a third less than the male, and not so corpulent. Her colour is less tawny, and her horns not above eight inches long.

The ibex is very strong, and, when close pressed, will sometimes turn upon the barbarous huntsman, and tumble him down the precipices, unless he has time to lie down, and let the creature bound over him. And if the pursuit be continued, this animal will throw itself down the steepest declivities, and fall on its horns in such a manner, as to remain unhurt.

#### THE ARNEE

Is the largest animal of the cattle tribe which has been discovered. It inhabits various parts of India, and so terrific is its appearance, that a few years ago a body of British troops were alarmed by a herd of them, in an inland province of Hindostan.

The horns are long, erect, and semilunar, flattened and annularly wrinkled, with smooth, round, approaching points. A British officer, who found one of these animals in the woods in the country above Bengal, says, that its form seemed to partake of those of a horse, bull, and deer; and that it was a very bold and daring animal.

Mr. Bingley gives the following observations on these animals: On enquiry made by Dr. Anderson, of gentlemen who had been in India, respecting cattle of large size in that part of the world, some of them mentioned animals of this kind, which they said were kept by the native princes chiefly for parade, under the name of *fighting bullocks*. A convincing proof that these animals are kept by the princes, and probably for parade, is obtained from an Indian painting, in which three of them are very distinctly delineated. This painting represents one of those entertainments that are given by the Indian princes for the amusement of their subjects, similar to the fights that were exhibited for the same purpose on the arena at Rome. An elephant is figured in the act of contending with two tigers; and, among the number of objects assembled, there are three arnees: these appear to be waiting apart, each under the guidance of a leader, who is seated upon his back, and has hold of a bridle in the animal's mouth.

#### THE AMERICAN BISON

Is a variety of the bull kind, (for which see Vol. III.) and has a hump upon the shoulders. In front this animal exhibits the ap-



pearance of a lion; having a small head, red fiery eyes, furious aspect, long shaggy mane, and beard under his chin. The forehead is very broad; and the horns are placed far asunder; on the middle of the back is a lump, almost as high as that of the camel.

In the back settlements great herds of bisons exist. They feed in open savannahs morning and evening; and retire, during the sultry parts of the day, to rest near shady rivulets. The hunters go against the wind, as the faculty of smell in the bisons is so exquisite, that the moment they get scent of their enemy they retire with precipitation. In taking aim the savage hunter directs his piece to the hollow of the shoulder, by which means he generally brings down the animal at one shot; but if not killed, the bison immediately runs upon his cruel pursuer, and with its horns and hoofs, tears him in pieces, or tramples him to death. When the unfortunate animals flee through the woods from a pursuer, they frequently brush down trees as thick as a man's arm; and, be the snow ever so deep, such is their strength and agility, that they are able to plunge through it much faster than the swiftest Indian can run in snow-shoes. "To this (says Mr. Hearne) I have many times been an eye-witness. I once had the vanity to think that I could have kept pace with them; but though I was at that time celebrated for running fleetly in snow-shoes, I soon found that I was no match for the bisons, notwithstanding they were then plunging through such deep snow, that their bellies made a trench as large as if many heavy sacks had been hauled through it." The hunting of the bison, in Canada, is a common employment of the natives. They draw up in a large square, and commence their operations by setting fire to the grass, which, at certain seasons, is long and dry. As the fire burns, they advance, closing their ranks as they proceed, and the poor animals, alarmed by the light, gallop confusedly about till they are hemmed in by "the two-legged monster man."

Bisons may easily be made subservient to the will of man, and, such is their expertness and docility, that they even bend their knees to take up or set down the burdens they are employed to carry.

#### THE BUFFALO.

Buffaloes are natives of the warmer parts of India and

Africa, but they are now perfectly naturalized in many European countries. In many parts of the East, and of Italy, buffaloes are domesticated.

The buffalo is by no means so beautiful an animal as the ox; the figure is more clumsy and awkward; the limbs less fleshy; the head is smaller, the aspect wilder, and the horns have a bunch of black hair hanging down between them. The flesh is also black, ill flavoured, and of a disagreeable smell. The milk of these quadrupeds, though very inferior to that of our cows, is produced in large quantities; and in warm countries, it is made into butter and cheese; the veal of the young animal is not better eating than the flesh of the old; and, in fact, the hide of the buffalo seems to be the most valuable thing he furnishes; as the leather made of it is justly famed for its thickness, softness, and impenetrability.

The following circumstance is recorded by the navigators who completed the voyage to the Pacific Ocean, begun by Captain Cook: When at Pulo Condore they procured eight buffaloes, which were to be conducted to the ships by ropes put through their nostrils and round their horns; but when these were brought within sight of the ship's people, they became so furious, that some of them tore out the cartilage of their nostrils, and obtained their liberty; while others broke down the shrubs to which it was found necessary to fasten them. All attempts to get them on board would have proved fruitless, had it not been for some children whom the animals would suffer to approach them, and by whose puerile management their rage was quickly appeased: and, when the animals were brought to the beach, it was by their assistance, in twisting ropes around their legs, that the men were enabled to throw them down, and thus get them into the boats.

Mr. Haufner, in his Travels in the Island of Ceylon, thus describes a desperate conflict between two wild buffaloes:—"We observed two animals on the bank of the river, busy in quenching their thirst. The moon at that moment was covered by a thick cloud, so that I could not distinguish what they were. It is certain, however, they belonged to the tiger species, though somewhat smaller. As soon as they had drank, which they did the one after the other, and not at the same time, though there was sufficient space, they set off at full speed for the woods. Another half hour nearly elapsed without any



more animals making their appearance, but the noise resounding on all sides made me very uneasy. At last we heard the deep low of some approaching animals, which we soon distinguished to be three buffaloes. After having drank a long time, they waded into the water till it was above their belly, then lay down in it, so that nothing could be seen but their noses. They remained in this position close to one another, for nearly a quarter of an hour. A fourth buffalo now made his appearance, and after snuffing very strongly at every thing round him, he also began to drink. The others had thrust their heads out of the water, when he approached, but did not seem willing to hinder him from drinking. Having quenched his thirst, he appeared inclined to join the rest in the water, but no sooner had one of the three observed this, than he stood up, and instantly attacked him with a hideous roar. The rage and might with which they attacked each other is not to be described. At every charge they retired some steps backwards, making the sand fly in clouds behind, and with dreadful snortings, they rushed at full speed, with the swiftness of an arrow, upon each other, so that they recoiled some paces back from the concussion. Sometimes, after having quickly approached each other, they suddenly stopped for an instant, till, bending their heads to the ground at the same time, the combat was again renewed. By degrees the open space between them became shorter; and blow followed blow in rapid succession, with a dreadful clatter, that was echoed and re-echoed along both sides of the woody banks. During this furious strife, the two others, which no doubt were females, lay quietly in the water; they only now and then turned their heads towards the place where the fortune of war was to decide to which of the two combatants, that seemed to be bulls, they should belong. At last, the one that arrived first was lucky enough to give the other such a tremendous blow in the side, that, without waiting for a second, he left the field of battle, and fled with the utmost speed into the forest. The proud conqueror, without pursuing his enemy, having lowed twice with so clear and terrific a sound that the echo resounded on every side, again betook himself to the water with the two others."

## CAPE BUFFALOES.

The savage disposition, large size, and enormous strength of these animals, render them too well known in all the countries which they inhabit. In Caffraria, a hundred and fifty, or two hundred of them, are seen in a herd. They frequently conceal themselves among the trees, and there stand lurking till some unfortunate passenger of that species whom they consider as the common enemy comes by, when they at once rush out into the road, and attacking him he has no chance of escape but by climbing a tree, if he is fortunate enough to be near one. Flight is of no avail: for he is speedily overtaken by the furious beast, who, after having thrown him down, and killed him, stands over him even for a long time afterwards, trampling him with his hoofs, and crushing him with his knees; and not only mangles and tears the body to pieces with his horns and teeth, but strips off the skin, by licking it with his tongue.\*

## THE ZEBRA.

The zebra much resembles the mule, is the most beautiful in respect of its skin, though the wildest animal in nature, and very splendid in the delicate regularity of its colour, and the lustrous smoothness of its skin; yet no animal can be less tractable. It is found chiefly in the

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\* As Professor Thunburg was travelling in Caffraria, he and his companions had just entered a wood, when they discovered a large old male buffalo, lying quite alone, in a spot, that for the space of a few square yards was free from bushes. The animal no sooner observed the guide, who went first, than, with a horrible roar, he rushed upon him. The fellow turned his horse short round behind a large tree, and the buffalo rushed forward to the next man, and gored his horse so dreadfully in the belly, that it died soon afterwards. These two men climbed into trees, and the furious animal made his way towards the rest, who were approaching, but at some distance. A horse without a rider was in the front; as soon as the buffalo saw this animal he became more outrageous than before, and attacked him with such fury, that he not only drove his horns into the horse's breast, but even out again through the very saddle. At this moment the Professor happened to come up, but from the narrowness of the path, having no room to turn round, he was glad to abandon his horse, and take refuge in a tree. The buffalo, however, had finished; for, after the destruction of the second horse, he turned suddenly round, and galloped away.—*Bingley*



southern parts of Africa ; and whole herds are often seen grazing in the extensive plains near the Cape of Good Hope. It is commonly called the wild ass, and though in colouring it differs so much from all other kinds and varieties of the horse, yet it agrees with it in all other respects. It equals the common ass in size, but is of a more elegant figure.

Several zebras, says Mr. Bingley in his *Animal Biography*, have at different times been brought into England. In the year 1814 there was one in the Tower, which was deposited there in the month of June 1803. It had been brought from the Cape of Good Hope by Lieutenant-General Dundas ; and was afterwards purchased by Mr. Bullock, the master-keeper of the animals in the Tower. This animal, which was a female, was more docile than the generality of zebras that have been brought into Europe ; and when in good humour, she was tolerably obedient to the commands of her keeper, the servant of the general, who attended her during the voyage. This man would spring on her back, and she would carry him a hundred and fifty, or two hundred yards ; but by the time she had done this, she always became restive, and he was obliged to dismount. Sometimes, when irritated, she plunged at the keeper, and attempted to kick him. She one day seized him by the coat with her mouth, and threw him upon the ground ; and, had not the man been extremely active in rising and getting out of her reach, would certainly have destroyed him. He at times had the utmost difficulty to manage her ; from the irritability of her disposition ; the great extent, in almost every direction, to which she could kick with her feet ; and the propensity she had of seizing whatever offended her, in her mouth. Strangers she would by no means allow to approach her, unless the keeper had hold of her head ; and even then there was great risk of a blow from her hind feet.

A few years since a beautiful zebra was kept at the Lyceum, near Exeter 'Change. This animal would allow the keeper to seat young children on his back, and in one instance a person rode it from the Lyceum to Pimlico. This docility is, however, very unusual, for the animal is naturally vicious and untractable.

## THE HIPPOPOTAMUS.

Mild is the Behemoth,\* though large his frame,  
 Smooth is his temper and repress his flame  
 While unprovok'd. This native of the flood  
 Lifts his broad foot, and puts ashore for food ;  
 Earth sinks beneath him as he moves along  
 To seek the herbs, and mingle with the throng.  
 The uplands feed him : there the beasts admire  
 The mighty stranger, and in dread retire ;  
 At length his greatness nearer they survey,  
 Graze in his shadow, and his eye obey.  
 The fens and marshes are his cool retreat,  
 His noon-tide shelter from the burning heat ;  
 Their sedgy bosoms his wide couch are made,  
 And groves of willows give him all their shade.

YOUNG.

These animals inhabit the rivers of Africa, from the Niger to Berg River, many miles north of the Cape of Good Hope. They formerly abounded in the rivers nearer the Cape, but they are now almost extirpated there.

The hippopotamus is as large, and not less formidable than the rhinoceros. Its form is very uncouth, the body being large, round, and clumsy ; the head very bulky ; the mouth prodigiously wide and disproportionable ; the eyes and nostrils small in proportion to the bulk of the animal ; on the lips are some strong hairs scattered in patches ; the hair on the body is very thin, of a whitish colour, and scarcely discernible at first sight. The skin is very thick and strong, invincible to a sabre, and of a dusky colour ; the tail is about a foot long, taper, compressed, and naked ; the legs short and thick, and the hoofs divided into four parts. In bulk it is second only to the elephant. The length of a male is seventeen feet, the circumference of the body fifteen, the height seven, the legs three, the head above three and a half, and the girth nearly nine. The mouth, when open, is above two feet wide, and furnished with forty-four teeth of different figures, cutting and canine ; those of the lower jaw very long, and so hard and strong that they strike fire with steel. (This circumstance probably gave rise to the fable of the ancients, that the hippopotamus vomited fire from his mouth.) The substance of the canine teeth is so white, fine, and hard, that it is preferable to ivory for artificial teeth. The cutting teeth are cylindrical and chamfered. The canine teeth are crooked, prismatic, and sharp, like the tusks of the wild boar. The grinders are square or oblong, like those

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\* The Scripture name for the Hippopotamus.



of man, and so large that a single tooth sometimes weighs three pounds. With such powerful arms, and such a prodigious strength of body, the hippopotamus might render himself formidable to every other animal. But he is naturally of a mild disposition, and is only formidable when provoked. His bulk is so great, that twelve oxen have been found necessary to draw one ashore which had been shot in a river above the Cape; and its hide is a load for a camel. Though he delights in the water, and lives in it as freely as upon land, yet he has not, like the beaver or otter, membranes between his toes. The great size of his belly renders his specific gravity nearly equal to that of water, and makes him swim with ease.

From the unwieldiness of his body and the shortness of his legs, the hippopotamus is not able to move fast upon land, and is then extremely timid. When pursued, he takes to the water, plunges in, sinks to the bottom, and is seen walking there at full ease; he cannot, however, continue there long, without often rising towards the surface; and in the daytime is so fearful of being discovered, that when he takes in fresh air, the place is hardly perceptible, for he does not venture even to put his nose out of the water. In rivers unfrequented by mankind, he is less cautious, and puts his whole head out of the water. If wounded, he will rise and attack boats or canoes with great fury, and often sink them by biting large pieces out of the sides: and frequently people are drowned by these animals; for they are as bold in the water as they are timid on land. In shallow rivers the hippopotamus makes deep holes in the bottom, in order to conceal his great bulk. When he quits the water, he usually puts out half his body at once, and smells and looks around; but sometimes rushes out with great impetuosity, and tramples down every thing in his way. During the night he leaves the rivers in order to pasture; when he eats sugar-canes, rushes, millet, rice, &c. consuming great quantities, and doing much damage in the cultivated fields. But as he is so timid on land, it is not difficult to drive him off. The Egyptians have a curious manner of freeing themselves from this destructive animal. They remark the places he frequents most, and there lay a great quantity of pease; when the beast comes on shore hungry and voracious, he falls to eating what is nearest him; and filling his belly with the pease,





W. Read. Sculp.

*The Hippopotamus.*





they occasion an unsupportable thirst: he then returns immediately into the river, and drinks upon these dry pease large draughts of water, which suddenly cause his death; for the pease soon begin to swell with the water, and not long after the Egyptians find him dead on the shore, blown up, as if killed with the strongest poison. The horse also feeds on the roots of trees, which he loosens with his great teeth. The hippopotami sleep in the reedy-islands in the middle of the stream, and on which they bring forth their young. A herd of females has but a single male; they bring one young at a time, and that on the land, but suckle it in the water. They are capable of being tamed. Belon saw one so gentle as to be let loose out of a stable and fed by its keeper, without attempting to injure any one.

This animal is the behemoth of Job, who admirably describes its manners, food, and haunts. "1. Behold now the behemoth, which I made near thee: he eateth grass as an ox. 2. Lo! now his strength is in his loins, and his force is in the navel of his belly. 3. His bones are as strong pieces of brass; his bones are like bars of iron. 4. He lieth under the shady trees, in the covert of the reed and fens. 5. Behold! he drinketh up a river: he trusteth he can draw up Jordan into his mouth." The first, the learned Bochart observes, implies the locality of its situation; being an inhabitant of the Nile, in the neighbourhood of Uz, the land of Job. The second describes its great strength; and the third, the peculiar hardness of its bones. The fourth indicates its residence amidst the vast reeds of the river of Egypt, and other African rivers overshadowed with thick forests. The fifth, the characteristic wideness of its mouth; which is hyperbolically described as large enough to exhaust such a stream as Jordan.

An account of the hippopotamus is given in Sparman's Voyage to the Cape of Good Hope, where these animals are called *sea-cows*. We shall here introduce a few particulars relative to the hippopotamus calf, which Mr. Sparman and his Hottentots had the good fortune to take.

"While the calf was yet alive (says he), I made a drawing of it, a copy of which may be seen in the Swedish Transactions for 1778. After this it was killed, dissected, and eaten up in less



than three hours time. The reason of this dispatch was partly the warmth of the weather, and partly our being in absolute want of any other fresh provisions. We found the flesh and fat of this calf as flabby as one might have expected from its want of age, and consequently not near so good as that of the old sea-cows; of which I found the flesh tender, and the fat of a taste like marrow, or at least not so greasy and strong as other fat. It is for this reason likewise that the colonists look upon the flesh and fat of the sea-cow as the wholesomest meat that can be eaten; the gelatinous part of the feet in particular, when properly dressed, being accounted a great delicacy. The dried tongues of these animals are also considered, even at the Cape, as a rare and savoury dish. On my return to Sweden, I had the honour to furnish his majesty's table with a dried sea-cow's tongue, two feet and eight inches long. With respect to form, the tongue of a full-grown hippopotamus is very blunt at the tip, and is in fact broadest at that part; if at the same time it is slanted off towards one side, and marked with lobes, as I was informed it is, this circumstance may, perhaps, proceed from the friction it suffers against the teeth, towards the side on which the animal chiefly chews; at least some traces of this oblique form were discoverable on the dried tongue I am speaking of.

“The hide of the adult hippopotamus bears a great resemblance to that of the rhinoceros, but is rather thicker. Whips likewise made of this hide are stronger, and, after being used some time, are more pliable than those made of the hide of the rhinoceros usually are, though they are not so transparent as these latter are when new.

“The food of the hippopotamus consists entirely of herbs and grass, a circumstance of which we are informed by Father Lobo; and which may partly be inferred from what I have already said on the subject, as well as from the figure of the stomach belonging to the foetus of a hippopotamus given in Buffon and Daubenton's elegant work. I therefore do not look upon it as very probable, that these animals, agreeably to the assertions of Buffon, or of Dampier in his Voyage, should hunt after fish by way of preying upon them; especially as in some of the rivers of the southern part of Africa, where the sea-cows are seen daily and in great abundance, there is not a fish to be seen; and in others only a few bastard springers, as they are called, which are scarcely as big as a common herring. It is said, that a small species of carp is still more rarely to be met with here. It is true, that the sea-cows sometimes frequent the mouths of the rivers here, which are full of sea-fish, and even sometimes the sea itself: we know, however, that these huge quadrupeds are notwithstanding this obliged to go from thence upon dry land in quest of food.”

This animal, however, seems no way disposed to exert its prodigious strength against an equal enemy; but chiefly resides at the bottom of the great rivers or lakes of Africa: where it leads an indolent kind of life, and appears seldom disposed for action, except when excited by the cravings of hunger. Upon these occasions three or four of them are often seen at the bottom of a river, near some cataract, forming a kind of a line, and seizing upon such fish as are forced down by the violence of the stream. In that element they pursue their prey with equal perseverance and celerity; as they swim with great force, and remain at the bottom for thirty or forty minutes, without rising to take breath.

#### THE LONG-NOSED TAPIR

Is the largest of all the South American quadrupeds, and bears a strong resemblance to the hippopotamus.

In 1704, says Mr. Bingley, a tapir was exhibited alive at Amsterdam, under the name of *Sea-horse*. Another, which, about the same time, was in the menagerie of the Prince of Orange, was so young as scarcely to be larger than a hog. Its proboscis, when at rest, did not much extend below the under lip; and, in this state, had numerous circular wrinkles; but was capable of considerable extension. It had no finger at the extremity, like the proboscis of an elephant, notwithstanding which, the animal, by means of it, could pick up from the ground the smallest objects. This creature was very gentle; and approached with familiarity any one who entered its lodge.

In 1812 there was, at Exeter 'Change, a young tapir, which was not bigger than a large hog. It had been brought into England about seven months before, with another of the same species.

#### THE SEA-LION.

These animals reside in families distinct from the common seal; each male having from two to four females, which he treats with great affection. They do not, as has been supposed, graze on shore; but their food consists entirely of fish, penguins, and marine animals. During the breeding season they fast for a long time, and become extremely emaciated; but at intervals they swallow large stones, for the purpose of keeping the stomach distended. When sleeping on shore, they place sentinels to give alarm in case of danger.



## LECTURE LX.

## ON BIRDS.

Meanwhile the tepid caves, and fens and shores  
 Their brood as numerous hatch, from th' egg that soon  
 Bursting with kindly rupture forth disclosed  
 Their callow young, but feathered soon and fledged  
 They summed their pens, and soaring th' air sublime  
 With clang despised the ground, under a cloud  
 In prospect : there the eagle and the stork  
 On cliffs and cedar tops their eyries build :  
 Part loosely wing the region, part more wise,  
 In common, ranged in figure wedge their way,  
 Intelligent of seasons, and set forth  
 Their aery caravan high over seas  
 Flying, and o'er lands with mutual wing  
 Easing their flight : so steers the prudent crane  
 Her annual voyage, borne on winds ; the air  
 Floats, as they pass, fanned with unnumbered plumes :  
 From branch to branch the smaller birds with song  
 Solaced the woods, and spread their painted wings  
 Till even, nor then the solemn nightingale  
 Ceased warbling, but all night tun'd her soft lays :  
 Others on silver lakes and rivers bathed  
 Their downy breast ; the swan with arched neck  
 Between her white wings mantling proudly, rows  
 Her state with oary feet ; yet oft they quit  
 The dank, and rising on stiff pennons, tower  
 The mid aerial sky. Others on ground  
 Walked firm ; the crested cock whose clarion sounds  
 The silent hours, and th' other whose gay train  
 Adorns him, coloured with the florid hue  
 Of rainbows and starry eyes.

MILTON.

BIRDS may be ranked among the most beautiful creatures in nature. Their plumage exhibits every variety of the richest colouring, and serves as examples of harmony in colours, akin to harmony in sound. The structure and conformation of their bodies, even of their minutest parts, is regular and perfect ; the mechanism which produces the various motions of the winged tribe is most wonderful. In comparing the muscles and bones of birds with those of the human species, the analogies are found

to be much greater, and more striking, than could have been expected, considering the little resemblance there is between the external forms of these two classes. This evinces the beautiful uniformity that reigns in the great scheme of nature, and that in orders of being so different. It is also a remarkable proof of final causes, when we consider that the diversities of this otherwise uniform plan are exactly suited to the nature, structure, and motions, which characterize each class.

Insects and birds pass most of their life in the air, and the earth seems foreign to them ; for they appear as if fearful of losing their liberty on touching it, by resting chiefly under the foliage of trees. Though differently organized, insects and birds have many relations from atmospheric influence. 'The insects' body has numerous canals filled by the air ; and the large lungs, and aerial cells under the cutis of birds, produce a similar result ; thus specifically lighter, both disregarding weight ; and spreading their wings at pleasure, increase the surface, and move in the invisible fluid. Their muscular system is equally powerful ; no fleshy manes, as in quadrupeds, but dry fibrous ramifications add strength and mobility, and the better capacitate them for their functions. Breathing only the purest air, with more subtile senses, they enjoy sensations unknown to the grosser animals. They act as if possessed of fore-knowledge of changes of weather, instability of meteors, and nature of calms and tempests.

The bird has very exalted senses, and his piercing view discovers objects at immense distances. A hawk sees from on high, and twenty times farther, a lark on a clod, than a man or a dog can perceive it. A kite, from a height imperceptible to man, sees lizards, mice, birds, on which to pounce ; and this sense of vision, takes easily, promptly, and alternately, all the forms necessary for all heights and distances.

To this sense of vision, the bird joins mobile organs complete ; feathers light yet solid, wings extensive, convex above, concave below, make the air's elasticity subservient to flight ; the vertebral column serves as a point of support, the tail for a rudder, the sternum for a keel, the head cuts and divides therein. With this apparatus,



a bird traverses an immense distance in a short time. The best horse cannot go above 15 miles in an hour, or 60 in a day, whereas a bird that flies high will go at least 20 in an hour, and 200 in a day. The falcon of Henry II. which escaped from Fontainebleau, was next day taken at Malta; and that of the Duke of Lerma went from Andalusia to Teneriffe in 16 hours.

Willoughby, Ray, and many others, imagine the principal use of the tail to be to steer, and to turn the body in the air, as a rudder. But Borelli has demonstrated, that this is the least use of it, and that it is chiefly to assist the bird in ascending and descending in the air, and to obviate the vacillations of the body and wings: for, with respect to the turning to either side, it is performed by the wings, and inclination of the body, and but very little by the assistance of the tail.

The industry of birds is in nothing more apparent than in the building of their nests. How regular and admirable are these little edifices, formed of such different materials: collected and arranged with such judgment and labour, and constructed with such elegance and neatness, without any other tools than a beak and two feet.

Birds *respire* by means of air-vessels, that are extended through their whole body, and adhere to the under-surface of the bones. These, by their motion, force the air through the true lungs, which are very small, seated in the uppermost part of the chest, and closely braced down to the back and ribs. This general diffusion of air through the bodies of birds, is to prevent their respiration from being stopped or interrupted by the rapidity of their motion through a resisting medium.

The *food* of birds is of course very different in the several kinds. Some are altogether carnivorous; others, as many of the web-footed tribes, live on fish; some on insects and worms, and many on fruits or grain. The extraordinary powers of the gizzard in the granivorous tribes, in preparing their hard food for digestion, are such as almost exceed credibility. In order to ascertain the strength of these stomachs, the Abbe Spallanzani made many cruel experiments. Tin tubes full of grain were forced into the stomachs of turkeys; and, after remaining twenty hours, were found to be broken, compressed, and distorted in a most irregular manner. The stomach of a cock, in the space of twenty-four hours, broke off the

angles of a piece of rough-jagged glass ; and, on examining the gizzard, no wound or laceration appeared. Twelve strong tin needles were firmly fixed into a ball of lead, with their points projecting about a quarter of an inch from the surface ; thus armed, it was covered with a case of paper, and forced down the throat of a turkey. The bird retained it a day and a half without exhibiting the least symptoms of uneasiness. When the turkey was killed, the points of nearly all the needles were found to be broken off close to the surface of the ball. Twelve small lancets, very sharp both at the points and edges, were fixed in a similar ball of lead. These were given, in similar manner, to a turkey-cock, and left eight hours in the stomach ; at the expiration of which time that organ was opened, but nothing appeared except the naked ball ; the twelve lancets having been all broken to pieces. From these facts it was concluded, that the stones so often found in the stomachs of many of the feathered tribes, are highly useful in assisting the gastric juices to grind down the grain and other hard substances which constitute their food. The stones themselves also, being ground down and separated by the powerful action of the gizzard, are mixed with the food, and no doubt contribute to the health as well as nutriment.

Almost every bird emigrates. The appearance and disappearance of the birds of season, particularly in the Hebrides, or Western Islands of Scotland, has not been disregarded by our own poets. Thus Mallet speaks of the birds that annually transmigrate to St. Kilda, the most remote and unfrequented of all those islands.

But, high above, the season full exerts  
Its vernal force in yonder peopled rocks,  
To whose wild solitude, from worlds unknown,  
The birds of passage transmigrating come,  
Unnumbered colonies of foreign wing,  
At Nature's summons, their aerial state  
Annual to found : and in bold voyage steer,  
O'er this wide ocean, through yon pathless sky,  
One certain flight to one appointed shore :  
By Heaven's directive spirit, here to raise  
Their temporary realm ; and form secure,  
Where food awaits them copious from the wave,  
And shelter from the rock, their nuptial leagues :  
Each tribe apart, and all on tasks of love,



To hatch the pregnant egg, to rear and guard  
Their helpless infants, piously intent.

And their disappearance from the same scenes is thus described by Mrs. Barbauld :

When winter bites upon the naked plain,  
Nor food nor shelter in the groves remain,  
By instinct led, a firm united band,  
As marshalled by some skilful general's hand,  
The congregated nations wing their way  
In dusky columns o'er the trackless sea;  
In clouds unnumbered annual hover o'er  
The craggy Bass, or Kilda's utmost shore :  
Thence spread their sails to meet the southern wind,  
And leave the gathering tempest far behind,  
Pursue the circling sun's indulgent ray,  
Course the swift seasons, and o'ertake the day.

Dr. Derham observes two circumstances remarkable in migration : the first, that these creatures should know the proper times for their passage, when to come, and when to go ; as also, that some should come when others go. No doubt, the temperature of the air as to heat and cold, and their propensity to breed their young, are their incentives so change their habitations. But why should they at all change their habitations ? The second remarkable circumstance is, that they should know which way to steer their course, and whither to go. What instinct is it that can induce a bird to venture over vast tracts of land and sea ? If it be said, that by their high ascents into the air, they can see across the seas ; yet what shall instruct or persuade them, that another land is more proper for their purpose than this ? That Great Britain, for instance, should afford them better accommodation than Egypt, the Canaries, Spain, or any of the other intermediate countries ?

The birds of passage are peculiarly accommodated, by the structure of their parts, for long flights ; and, in their migrations, they observe a wonderful order and polity : they fly in troops, and steer their course, without the aid of a compass, to unknown regions.

The flight of the wild geese, in a wedge-like figure, has been often observed ; to which it is added, by the natural historian of Norway, that the three foremost, who are the soonest tired, retreat behind, and are relieved by others, who are again succeeded by the rest in order. But this circumstance has been observed, many ages before, by Pliny, who describes certain birds of passage flying in the form of a wedge, and spreading wider and wider ; those be-

hind resting upon those before, till the leaders, being tired, are, in their turn, received into the rear:

Where the Rhine loses its majestic force  
 In Belgian plains, won from the raging deep,  
 By diligence amazing, and the strong  
 Unconquerable hand of Liberty,  
 The stork assembly meets ; for many a day,  
 Consulting, deep, and various, ere they take  
 Their arduous voyage thro' the liquid sky.  
 And now, their route designed, their leaders chose,  
 Their tribes adjusted, cleaned their vigorous wings ;  
 And many a circle, many a short essay,  
 Wheeled round and round, in congregation fall  
 The figured flight ascends ; and riding high  
 The aerial billows, mixes with the clouds.

THOMSON.

Mr. Biberg observes, that ‘ the starling, finding, after the middle of summer, that worms are less plentiful in Sweden, goes annually into Scania, Germany, and Denmark. Our aquatic birds (continues he) are forced by necessity to fly toward the south every autumn, before the water is frozen. Thus we know, that the lakes of Poland and Lithuania are filled with swans and geese every autumn, at which time they go in great flocks, along many rivers, as far as the Euxine Sea. But in the beginning of spring, as soon as the heat of the sun molests them, they return back, and go again to the northern ponds and lakes, to lay their eggs. For there, and especially in Lapland, there is a vast abundance of gnats, which afford them excellent nourishment, as all of this kind live in the water before they get their wings.’

The principal food of the birds of passage, while in Great Britain, is the fruit of the white thorn, or haws, which hang on our hedges in winter in prodigious plenty ; but where they breed, and seem to be most at ease, as in Sweden, &c. there are no haws ; nor indeed in many of the countries through which they journey on their way : so that it is evident they change their food in their passage.

‘ Returning home (says Sir Charles Wager) in the spring of the year, as I came into soundings in our channel, a great flock of swallows came and settled on my rigging ; every rope was covered ; they hung on one another like a swarm of bees ; the decks and carving were filled with them. They seemed almost famished



and spent, and were only feathers and bones ; but, being recruited with a night's rest, they took their flight in the morning.' This apparent fatigue proves, that they must have had a long journey, considering the amazing swiftness of these birds ; so that, in all probability, they had crossed the Atlantic ocean, and were returning from the shores of Senegal, or other parts of Africa.

Their re-appearance in spring is thus happily illustrated by Jago :

At length the winter's surly blasts are o'er ;  
 Arrayed in smiles the lovely spring returns :  
 Health to the breeze unbars the screaming door,  
 And every breast with heat celestial burns.  
 And see, my Delia, see o'er yonder stream,  
 Where on the sunny bank the lambkins play ;  
 Alike attracted to th' enliv'ning gleam,  
 The stranger-swallows take their wonted way.  
 Welcome, ye gentle tribe, your sports pursue,  
 Welcome again to Delia, and to me :  
 Your peaceful councils on my roof renew,  
 And plan your settlements from danger free.  
 No tempest on my shed its fury pours,  
 My frugal hearth no noxious blast supplies ;  
 Go, wand'ers, go, repair your sooty bowers,  
 Think, on no hostile roof my chimnies rise.  
 Again I'll listen to your grave debates,  
 I'll think I hear your various maxims told,  
 Your numbers, leaders, policies, and states,  
 Your limits settled, and your tribes enrolled.  
 I'll think I hear you tell of distant lands,  
 What insect-nations rise from Egypt's mud,  
 What painted swarms subsist on Libya's sands,  
 What mild Euphrates yields, and Ganges' flood.  
 Thrice happy race ! whom Nature's call invites  
 To travel o'er her realms with active wing,  
 To taste her choicest stores, her best delights,  
 The summer's radiance, and the sweets of spring :  
 While we are doomed to bear the restless change  
 Of shifting seasons, vapours dank, or dry,  
 Forbid, like you, to milder climes to range,  
 When wintry clouds deform the troubled sky.  
 But know the period to your joys assigned !  
 Know ruin hovers o'er this earthly ball ;  
 Certain as fate, and sudden as the wind,  
 Its secret adamantine props shall fall.

Yet when your short-lived summers shine no more,  
 My patient mind, sworn foe to vice's way,  
 Sustained on lighter wings than yours, shall soar  
 To fairer realms beneath a brighter ray :

To plain etherial, and Elysian bowers,  
 Where wintry storms no rude access obtain,  
 Where blasts no lightning, and no thunder low'rs,  
 But spring and joy unchanged for ever reign.

Where do the cranes, or winding swallows, go ?  
 Fearful of gathering winds and falling snow ?  
 If into rocks, or hollow trees, they creep,  
 In temporary death confined to sleep ;  
 Or, conscious of the coming evil, fly  
 To milder regions and a southern sky ?

PRIOR.

Thomson, in noticing their disappearance in autumn, speaks with some uncertainty on the subject :

When Autumn scatters his departing gleams,  
 Warned of approaching Winter, gathered, play  
 The swallow-people ; and tossed wide around,  
 O'er the calm sky, in convulsion swift,  
 The feathered eddy floats : rejoicing once,  
 Ere to their wintry slumbers they retire ;  
 In clusters clung, beneath the mould'ring bank,  
 And where, unpierced by frost, the cavern sweats.  
 Or rather into warmer climes conveyed,  
 With other kindred birds of season, there  
 They twitter cheerful, till the vernal months  
 Invite them welcome back : for, thronging, now  
 Innumerable wings are in commotion all.

Naturalists are much divided in their opinion concerning the periodical appearance and disappearance of swallows. Some assert, that they remove from climate to climate, at those particular seasons when winged insects, their natural food, fail in one country, and are plentiful in another, where they likewise find a temperature of air better suited to their constitution. In support of this opinion we have several testimonies.

Mr. Daines Barrington has adduced many arguments and facts to prove, that no birds, however strong and swift in their flight, can possibly fly over such large tracks of the ocean as has been commonly supposed. He is of opinion, therefore, that the swallows mentioned by M. Adanson, instead of being on their passage from Europe, were only fluttering from the Cape de Verd Islands to the



continent of Africa; a much nearer flight, but to which they seemed to be unequal, as they were obliged, from fatigue, to alight upon the ship, and fall into the hands of the sailors.

Buffon had recourse to the most creditable travellers, and he found them agreed as to the passage of swallows over the Mediterranean. And M. Adanson has positively assured me, says he, that during the long stay he made in Senegal, he observed the long-tailed swallow, the same with the chimney swallow, arrive constantly in Senegal about the time it leaves France, and as constantly leave Senegal in the spring. It cannot therefore, be doubted, that this species of the swallow passes from Europe into Africa in the autumn, and from Africa to Europe in the spring; of consequence it neither sleeps nor hides itself in holes, nor plunges into the water on the approach of winter, as some credulous persons have pretended. There is, besides, another well authenticated fact, which comes in proof here, and shows that this swallow is not reduced to a torpid state by cold, which it can bear to a certain degree; and if that degree is exceeded, it dies: for if we observe these birds toward the end of the warm season, we shall see them, a little before their departure, flying together in families, the father, the mother, and the young brood. Afterward several families unite, and form themselves into flocks more or less numerous in proportion as the time of their departure draws near. At last they go altogether, three or four days before the end of September, or about the beginning of October. Still, however, some remain, and do not set off till a week, a fortnight, or three weeks after the rest: and some too there are which do not go at all, but stay and perish under the first rigours of the cold. These swallows that delay their flight, or never undertake it, are such as find their young too weak to follow them; such as have had the misfortune to have their nests destroyed after laying, and have been obliged to rebuild them a second or a third time. They stay for the love of their little ones, and choose rather to endure the rigour of the season than to abandon their offspring. Thus they remain sometime after the rest for the purpose of taking their young with them: and if they are unable to carry them off in the end, they perish with them.

These interesting and affecting facts then plainly demonstrate (concludes M. Buffon) that the chimney swallows pass successively and alternately from our climate to another that is warmer; that they spend their summer here, and our winter there; and of consequence never fall into a state of insensibility.

The progress of the emigration of marine birds is illust-

ed by this fact: A booby, taken by the Conway, had on one of its legs a label inscribed *Henry de Nantes*; which was taken off, and a bit of silver inscribed *the Conway* was substituted. At Rio Janeiro the Conway hailed the *Henry de Nantes*; and on comparing the latitudes and longitudes of the ships, from the log-book, the bird had traversed 600 miles of ocean between the times of liberation and taking.

*Table of the migration of British Birds.*

	<i>First seen.</i>	<i>Last seen.</i>
Swallow .....	April 18	Oct. 31
Martin .....	March 4	Oct. 16
Sand Martin .....	March 26	Sept. 12
Swift .....	May 9	Sept. 3
Goatsucker .....		Sept. 27
Turtle Dove .....	June 5	Aug. 10
Wry-neck .....	March 26	Sept.
Cuckoo .....	May 1	Aug. 10
Nightingale .....	April 25	Sept. 20
Blackcap .....	May 10	Sept. 18
White-throat .....	April 22	Sept. 16
White-ear .....	May 4	Sept. 26
Whinchat .....	June 1	Sept. 21
Redstart .....	April 24	Sept. 1
Willow-wren .....	April 23	Sept. 24
Fly-catcher .....	May 8	Sept. 30
Red-backed Shrike .....	June 1	Aug. 16
Land-rail .....		Oct. 20
Quail .....	Aug. 20	
Fieldfare .....	Nov. 21	April 10
Red-wing .....	Nov. 10	March 18
Woodcock .....	Oct. 20	April 1
Snipe .....	Nov. 20	March 20
Jack Snipe .....	Dec. 26	March 16
Sea Lark .....	April 1	
Greater Tern .....	April 1	Oct. 8
Lesser Tern .....	May 20	Oct. 16
Royston Crow .....	May 22	March 29

Some birds possess so highly an imitative faculty, that they can be taught the language of men, and the melodies of artificial music. Their voices may be divided into croaking, chattering, clucking, screaming, and singing. The note of the raven is hoarse, and disagreeable; yet it may be taught to speak and sing similarly to men. The magpie, which has a natural chattering, may be also taught, as well as the starling, whose primitive language



is harsh and rather discordant. The cry of the owl is solemn ; it calls to courtship ;—such also is the object of the cuckoo, when, in a style agreeable and mellow, though monotonous, it announces the return of spring. The cooing of turtles is exceedingly soft ; the tears they shed endear them to our best affections. The plover allures the dog and his more barbarous master from her nest ; flying from her home, she endeavours to decoy them by her cries and wailings ; when near her nest, she ceases to cry ; overcome with fear, or endeavouring to debar by her apparent indifference.

As the smallest insect has the greatest strength in proportion to its size, and winged insects the greatest speed in flight, birds have a louder voice in reference to their dimensions than any other animal. The voice of the Brazilian aubima is exceeding loud ; that of the bittern, deep and solemn, is heard only in the days of its liberty ; in captivity it is silent ;—while the cry of the cock of the wood, compared to an explosion, is succeeded by a noise like the whetting of scythes. Swelling upon the breeze, the higher notes of the gull, the tenor of the anile, and the bars of the cormorant, united to the murmur of the ocean, echoed from the rocks beneath, form one of the most curious and solemn concerts in nature.

The Brazilian parakeet is one of the most beautiful and loquacious of birds ; the blue bird of the Alps, not only sings delightfully, but whistles and speaks ; the red-wing, silent and insipid as it is in our climate, sings most agreeably in the north ; while the Orpheus (mock-bird) of America has the faculty of imitating every sound of bird or beast, in its neighbourhood ; it will allure the thrush and any other bird with the note of its mate, and, when it is near, frighten it with the scream of the eagle : he will scream like an eagle, whistle for a dog, bark, mew, crow, cluck, squeak, and scream like a swallow ; capable of every modulation, in his imitations he is minute in measure and accent ; but in force and sweetness of expression far superior to his originals ; its natural notes are rich, soft, and various, far more delightful than his assumed ones, much resembling those of the nightingale, but of greater compass and volume ; and not unfrequently characterized by a very agreeable solemnity. This bird,

like the American finch, sings as much by night as by day; and Cook, when off New Zealand, was charmed beyond description with the songs of birds during the night in the woods which beautify the shores of that island. The chanting thrush is the only singing-bird in China; while the pagoda thrush is the most delightful chorister in India. The cardinal, of America, though an aquatic, is as melodious as any bird in Germany or France; and the polyglot of Mexico has the most exquisite note of any bird on the American continent. In India there is a black bird called the kokila, which sings in the nights of spring; its notes are rich, various, and harmonious, lower than the nightingale, and almost as delicate; and, like the cuckoo, it lays its eggs in another bird's nest.

Wide o'er the winding umbrage of the floods,  
Like vivid blossoms glowing from afar;  
Thick swarm the brighter birds. For Nature's hand,  
That with a sportive vanity has deck'd  
The plummy nations, there her gayest hues  
Profusely pours.

The north of Europe has several delightful singing birds. In Finland, the tetrao wrogallus, which is as large as a turkey, perches upon a tree, and sings all night, about a minute at a time. In Lapland, is the mocking-bird *hundred timer*, the size of a robin, on its breast a yellow spot, fringed with white, and surrounded with blue; but the finest singing bird is the emberiza geniclos, which sits on the willows on the banks of the rivers. In Sweden, the nightingale of the north is called the motacilla trochilus, and the motacilla suecica (blue-throated warbler), has a beautiful plumage and note, surpassing the nightingale of Italy in sweetness of modulation.

What lover of music but is charmed with the various modulations of the English singing birds? The sweetness of the throstle; the cheerfulness of the sky-lark; the mellowness of the thrush, building near the miseltoe; the imitative talent of the bull-finch; the varied and familiar language of the red-breast, endeared from our childhood; the wood-lark, little inferior to the nightingale, and sheltering her home under large tufts of grass, from cold and intrusion; the vivacity of the wren, in her



nest encircled with ivy ; the solemn cry of the owl, and the soft cry of the linnet, subject to melancholy ! Not one of these birds breathes a single note that is not listened to with pleasure. But

All this is nothing to the nightingale,  
Breathing so sweetly from a breast so small,  
So many tunes. DU BARTAS.

*Table of the comparative merits of British Singing-Birds,  
20 being adopted as the point of perfection.*

	<i>Mellow- ness of Tone.</i>	<i>Spright- liness.</i>	<i>Plain- tiveness.</i>	<i>Compass</i>	<i>Execu- tion.</i>
Nightingale .....	20	20	20	20	20
Sky-lark .....	4	19	4	18	18
Wood-lark .....	18	4	17	12	8
Tit-lark .....	12	12	12	12	12
Linnet .....	12	16	12	16	18
Goldfinch .....	4	19	4	12	12
Chaffinch .....	4	12	4	3	8
Thrush .....	4	4	4	4	4
Blackbird .....	4	4	0	2	2
Robin .....	6	16	12	12	12
Wren .....	0	12	0	4	4
Black-cap .....	14	12	12	14	14

The man-of-war bird, says Mr. Bucke, in his elegant work on the Harmonies and Sublimities of Nature, soars in the air like a kite, which it resembles in shape only ; with a black body and red neck ; its eye is so keen that it can see fish on the surface of the ocean ; it descends, seizes its prey without scarcely touching the water with its bill, and swiftly mounts again ; traversing the ocean from island to island, and maintaining itself on the wing.

The petrel, named after St. Peter, because, though actually on the wing, it seems to walk upon the water ; is about the size of a swallow, has long legs, spouts oil from its nostrils, and being alike insensible to storms, the heat of the tropics, and the rigours of the Arctic and Antarctic Poles, is seen in almost every sea, and transports itself from one end of the ocean to the other.

The caica, having a green body, and blue wings and tail, in 1773 appeared suddenly in Cayenne ; but whence

it came, no one could conjecture. Since then, small flocks annually resort thither in September and October ; but they immediately disappear on the commencement of stormy weather.

In the Interior of New Holland, is a peculiar kind of pigeon, the back part of whose head is flesh coloured, and surmounted by a black plume or crest, the eyes are red, the breast fawn coloured, and the downy feathers golden, edged with white. Also,

The *ornithorynchus paradoxus*, is an oviparous animal, yet does not properly belong to any class of beasts, birds, or fishes. The male has large spurs, resembling those of a cock, placed over a cyst of venom, which by a perforation through the spur, similar to that of the rattlesnake's teeth, is conveyed into the wound inflicted by the spur.

The American mock-bird is so attached to liberty, that the most assiduous efforts cannot controul it. Captain Aubrey states, that often have nests been procured, and placed with the young in a cage hung in the air ; the parent birds have come a few times to feed their young, but finding they could not release them, have gone off and quickly returned with food of a poisonous quality, thereby to deliver them from their state of slavery and captivity.

But what bird, lute, or harp, says Mr. Bucke, shall we compare with the note of the fly-bird, of America, or the nightingale of Europe and Asia ? No instrument can successfully imitate the latter ; though the human voice is capable of intonations equally sweet and equally touching. Though represented as melancholy, she is, in fact, a cheerful bird. She sings by day as well as by night, and is the most garrulous of singing birds. Her notes strong and sonorous, wild and mellow, are remarkably enlivening when heard at highest noon, and only pensive and melancholy when all nature is lulled to repose, and our feelings are hushed to silence.

All birds sing in spring ; they chant most of the day, and many of them startle the silence of night ; as the water-ousel, white-throat, reed-sparrow, owl, wood-lark, and nightingale. The black-bird, willow-wren, and tit-



lark, sing so late as September ; thrushes warble in October ; and the red-breast cheers the copse and thicket even in the depths of winter. The swallow, ungifted with melody, is from its activity one of the most wonderful of birds. Sweeping with the rapidity of an eagle, it flies a mile in a minute ; and is supposed to fly eight times the circuit of the globe in the year.

In spring, the gay troops begin to plume the painted wing, and try again the long forgotten strain ; the woods and plains resound with lavish harmony ; attentive to the order of nature, the strains are indicative of social regard, poured forth in courtship to their mates. They form connubial leagues, retire to secluded places, and construct their inimitable nests ; each species, wherever resident, employing the same materials, in the same arrangement and situations, for their temporary habitations. With what caution does the female deposit her eggs in places unfrequented and free from noise and disturbance ; how very surprisingly does she cover them, often turning them that all parts may partake the vital warmth ; and how careful is she to prevent their cooling while she is providing a little sustenance ! When the birth approaches, how nicely she assists the young to break forth from its prison, and yet how carefully she shelters them from every inclemency of weather ! Can any chemical operation be carried forward with greater attention and success ? How obviously does the Cause of rationality in man, supply requisite instinct to the feathered race ! The parental cares now engage the attention of both male and female ; while every exertion is made to supply with suitable sustenance, the produce of their connubial enjoyments, what arts, and how many stratagems do they employ, to divert from their tender progeny the rude foot that would molest them !

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The *classification* of birds is principally founded on their habits of life ; and on the formation of their external parts, particularly of their bills. The grand division is into LAND BIRDS and WATER BIRDS.

*Land Birds.*

1. *Rapacious Birds (accipitres)* have their bill hooked; and on each side of the upper mandible there is an angular projection. These birds are all carnivorous, and associate in pairs; and the female is generally larger and stronger than the male.

2. *Pies (picæ)*. These have their bill sharp at the edge, compressed at the sides, and convex at the upper surface. The principal genera are Shrikes, Crows, Rollers, Orioles, Grackles, Humming-birds, Parrots, Toucans, Cuckoos, Woodpeckers, Hornbills, and Kingfishers.

3. *Passerine Birds (passeres)*, have a conical, sharp-pointed bill. To this order belong the Finches, Grosbeaks, Buntings, Thrushes, Fly-catchers, Swallows, Larks, Wagtails, Titmice, and Pigeons.

4. *Gallinaceous Birds (gallinæ)*. The bills of these birds have the upper mandible considerably arched. Pheasants, Turkeys, Peacocks, Bustards, Pintadoes, and Grouse, all belong to this order.

*Water Birds.*

5. *Waders (grallæ)*. These have a roundish bill, and a fleshy tongue; and the legs of most of the species are long. The principal genera are the Herons, Plovers, Snipes, and Sandpipers, which live for the most part among marshes and fens, and feed on worms and other animal productions.

6. *Swimmers (anseræ)*. The bills of these birds are broad at the top, and covered with a membranaceous skin. The tribes best known are the Ducks, Auks, Penguins, Petrels, Pelicans, Guillemots, Gulls, and Terns. They live chiefly in the water, and feed on fish, worms, and aquatic plants.



## LECTURE LXI.

## ON BIRDS.

SAY, who the various nations can declare  
That plough with busy wing the peopled air?  
These cleave the crumbling bark for insect food,  
Those dip their crooked beak in kindred blood;  
Some haunt the rushy moor, the lonely woods;  
Some bathe their silver plumage in the floods;  
Some fly to man, his household gods implore,  
And gather round his hospitable door;  
Wait the known call, and find protection there  
From all the lesser tyrants of the air.  
The tawny eagle seats his callow brood  
High on the cliff, and feasts his young with blood.  
On Snowdon's rocks, or Orkney's wide domain,  
Whose beetling cliffs o'erhang the western main,  
The royal bird his lonely kingdom forms  
Amidst the gathering clouds and sullen storms;  
Through the wide waste of air he darts his sight,  
And holds his sounding pinions pois'd for flight;  
With cruel eye premeditates the war,  
And marks his destined victim from afar:  
Descending in a whirlwind to the ground,  
His pinions like the rush of waters sound;  
The fairest of the fold he bears away,  
And to his nest compels the struggling prey.  
He scorns the game by meaner hunters tore,  
And dips his talons in no vulgar gore.  
With lovelier pomp, along the grassy plain,  
The silver pheasant draws his shining train:  
Once on the painted banks of Ganges' stream  
He spread his plumage to the sunny gleam;  
But now the wiry net his flight confines,  
He lowers his purple crest, and inly pines.

To claim the verse unnumber'd tribes appear  
That swell the music of the vernal year:  
Seiz'd with the spirit of the kindly spring,  
They tune the voice, and sleek the glossy wing,  
With emulative strife the notes prolong,  
And pour out all their little souls in song.  
When Winter bites upon the naked plain,  
Nor food nor shelter in the groves remain,

By instinct led, a firm united band,  
 As marshall'd by some skilful general's hand,  
 The congregated nations wing their way  
 In dusky columns o'er the trackless sea;  
 In clouds unnumber'd annual hover o'er  
 The craggy Bass, or Kilda's utmost shore;  
 Thence spread their sails to meet the southern wind,  
 And leave the gathering tempest far behind;  
 Pursue the circling sun's indulgent ray,  
 Course the swift seasons, and o'ertake the day.

MRS. BARBAULD.

### THE CONDOR

Is probably the largest of birds able to fly, and is from nine to eighteen feet from the tip of one wing to that of the other. The bill is strong, about four inches long, moderately hooked, and blunt at the tip, which is white, the rest of it being of a dusky colour. On the top of the head runs a kind of carunculated substance, erected like the comb of a cock. The head and neck are slightly covered with brown down, in some parts nearly bare, and carunculated as in the neck of a turkey. The lower part of the neck is surrounded with a ruff of a pure white and hairy feathers. The upper parts of the body, wing, and tail, are black, the middle wing coverts have whitish ends, and the greater coverts half black half white.

Ulloä states, that he once saw, in South America, a condor seize and fly away with a lamb. "Observing (says he) on a hill adjoining to that where I stood, a flock of sheep in great confusion, I saw one of these birds flying upwards from among them, with a lamb betwixt its claws; and when at some height, it dropped it. The bird immediately followed, took it up, and let it fall a second time; when it flew out of sight, on account of the Indians, who, alarmed by the cries of the boys and the barking of the dogs, were running towards the place."

Frezier, in a voyage to the South Seas, also thus describes the condor:—"We one day killed a bird of prey called the condor; which measured nine feet from the end of one wing to the end of the other, and had a brown comb or crest, but not jagged like that of a cock. The forepart of its throat was red, without feathers, like that of a turkey. These birds are generally large and strong enough to take up a lamb. In order to separate one of those animals from the flock, they form themselves into a circle, and advance towards them with their wings extended, that, by being driven too close together, the full-horned rams may not be able to defend their young-ones. They then pick out the lambs, and carry



them off. Garcillasso says, there are some condors in Peru which measure sixteen feet from the point of one wing to that of the other, and that a certain nation of Indians adore them."

These birds make their nests among the inaccessible rocks, and are very destructive to sheep, and will in troops often attempt calves; some of them first picking out the eyes, whilst others attack the poor animal on all sides, and soon tear him to pieces. This gives rise to the following stratagems: The Indians of those countries work together a quantity of viscous clay into the forms likely to attract the bird,—as a lamb or child, upon which he darts with such determinate force, that his claws become entangled, and ere he can extricate them those who watch his descent arrive and dispatch him. But another and different method is used by the peasants of Chili: one of them wraps himself up in the hide of a fresh killed sheep or ox, and lies still on the ground; the condor, supposing it to be lawful prey, flies down to secure it, when the person concealed lays hold of the legs of the bird, his hands being well covered with gloves; and immediately his comrades, who are concealed at a distance, run in, and assist to secure the depredator, by falling on him with sticks till they have killed him.

From this statement, the *harpies* of Virgil, and other poets, seem much divested of the fictitious character heretofore assigned them. De Solis states (in reference to this bird) that among the curiosities of the Emperor of Mexico, were feathered animals of such extraordinary size and fierceness, that they appeared rather to be monsters than birds. It is very probable that the fable of the *Gryphons* is founded on a knowledge of the ferocity and rapacity of this bird.

It has generally been imagined, that the accounts of this dreadful animal gave rise to the exaggerated description of the bird that makes so conspicuous a figure in the Arabian Tales, under the name of *Roc*: but this seems very improbable, as we have no satisfactory evidence of the condor having ever been found on the Old Continent.

#### THE KING OF THE VULTURES,

So called from his beautiful appearance, is a native of America only.

He is larger than a turkey-cock; the beak is thick, short, often

entirely red, and hooked just at the point; the cere is orange, broad, containing the nostrils, and stretching from each side to the crown of the head; the eyes are surrounded by a red skin, and the irides have the colour and lustre of pearls; the head and neck are naked, the crown covered with a flesh-coloured skin, scarlet behind and crimson before; under the naked part of the neck is a ruff of long soft ash-coloured feathers, wholly encircling the neck, in which the bird can conceal the neck and part of the head, like a cowl. The feet and nails are in some reddish, in others whitish, and but slightly curved.

#### THE CARRION VULTURE

Is cowardly, filthy, and voracious; and was its high and rapid flight accompanied with a proportionable degree of courage, it might live by the chase; but, like cowards of a higher order, it dare not face danger, even when its adversary is diminutive, or maimed; consequently, it feeds on dead carcasses, snakes, lizards, &c. which makes its smell very offensive. In those parts where the hunters destroy beasts solely for their skins, vultures abound, and by their rapacity soon devour the carcasses, whose putrefaction would taint all the surrounding atmosphere. The nest is built in very dangerous spots on precipices, and the female lays two eggs near as large as those of a goose.

This bird is very common in the West Indies, and in both North and South America. In general, it is very tame in its wild state, but particularly so when trained up from being young, as was experienced by Latham in two birds sent home from Jamaica. They were suffered to run wild about the garden, and were alert and brisk during the summer months; but impatient of the least cold; for a rainy day, with the slightest degree of cold, obliged them to creep for shelter. In the West Indies, they roost together at night, in vast numbers, like rooks in the country. They are very useful animals in the places where they resort; and their safety is secured by a penalty for killing one, which is in force in Jamaica, and other islands of the West Indies.

In Carthage, they may be seen sitting on the roofs of the houses, or even stalking along the streets. They are here of infinite service to the inhabitants, by devouring that filth which otherwise, by its intolerable stench, would render the climate still more unwholesome than it



is. When they find no food in the cities, they seek for it among the cattle of the adjoining pastures, and if any animal be unfortunate enough to have a sore on his back, they instantly alight on it, and attack the part affected. The unfortunate beast may in vain attempt to free itself from the gripe of their talons : even rolling on the ground is of no effect. In hot climates, where putridity takes place in a few hours after death, the effects of the aggregated stench would be fatal, were it not for the exertion of animals of this description. They destroy the eggs of the alligator, and watch the female crocodile in the act of depositing her eggs in the sand ; and no sooner does she retire into the water, than they dart to the spot, and feast upon the contents of the eggs.

#### THE AQUILINE, OR EGYPTIAN VULTURE,

Frequents the sterile and sandy country around the Pyramids. Extensive flocks of them are also found in Cairo, where they feed on offal and dead animals in the streets, promiscuously with the dogs. Every morning and evening they assemble with the kites, in the square below the castle, in order to receive the alms of fresh meat that have been left to them by the legacies of various wealthy men.

In Palestine they are of infinite service, in destroying the vast multitudes of rats and mice which breed in the fields ; and which, without their assistance, would devour the whole fruits of the soil. They also frequent the deserts, and there devour the bodies of men and animals which perish in those desolated regions ; and they annually follow the caravan from Egypt to Mecca, to feast upon the flesh of slaughtered beasts, and the carcasses of the camels which die on the journey.

#### THE CAPE VULTURES

Frequent all the country at the Cape of Good Hope ; and are so familiar, that they often descend, in great numbers, near the entrance to the shambles of the Cape Town, and there devour the heads, entrails, and other offal, of the animals slaughtered for the market. On the sea shore they are also very abundant, voraciously devouring all such animal substances as have been thrown upon the coast by the tides. They subsist likewise on crabs, tortoises, shell-fish, and even locusts.

In anatomizing a dead animal, Kolben informs us that these birds exhibit infinite dexterity, and that they separate the flesh from the bones in such a manner as to leave the skin almost entire.

#### THE SECRETARY, OR SERPENT-EATER

Is particularly remarkable from the great length of its legs; at first sight inducing the supposition that it belonged to waders; but the characters of the vulture are too strongly marked to leave any doubt as to which class it belongs.

This bird, when standing erect, is full three feet from the top of the head to the ground. The bill is black, sharp, and crooked, like that of an eagle; the head, neck, breast, and upper parts of the body, are of a blueish ash-colour: the legs are very long, stouter than those of a heron, and of a brown colour; claws black, shortish, but crooked, not very sharp; from the hind-head spring, by pairs, many long feathers, which hang loose behind like a pendant crest, and are longer as they are lower down on the neck; this crest the bird can erect or depress at pleasure; it is of a dark colour, almost black; the webs are equal on both sides, and rather curled; and the feathers, when erected, somewhat incline towards the neck; the two middle feathers of the tail twice as long as any of the rest.

This singular species inhabits the internal parts of Africa, and is frequently seen at the Cape of Good Hope. It is also met with in the Philippine islands. It has the peculiar faculty of striking forwards with its legs, never backwards. Forster mentions a circumstance, which he supposes to be peculiar to this bird; that should it by any accident break the leg, the bone would never unite again. Dr. Solander saw one of these birds take up a snake, small tortoise, or such like, in its claws; and when dashing it against the ground with great violence, if the victim was not killed at first, it repeated the operation till that end was answered; after which it devoured it.

M. Le Vaillant witnessed an engagement between a secretary falcon and a serpent. The battle was obstinate, and was conducted with equal address on both sides. But the serpent at length feeling the inferiority of his strength, employed, in his attempt to regain his hole, all that cunning which is attributed to the tribe; while the bird, apparently guessing his design, stopped him on a sudden and cut off his retreat, by placing herself before him at a single leap. On whatever side the reptile endeavoured to make his escape, his enemy still appeared before him. Then,



uniting at once both bravery and cunning, the serpent boldly erected himself to intimidate the bird; and, hissing dreadfully, displayed his menacing throat, inflamed eyes, and a head swollen with rage and venom. Sometimes this threatening appearance produced a momentary suspension of hostilities; but the bird soon returned to the charge, and, covering her body with one of her wings as a buckler, struck her enemy with the bony protuberance of the other. "I saw him (says M. V.) at last stagger and fall: the conqueror then fell upon him to dispatch him, and, with one stroke of her beak, laid open his skull." At this instant M. Le Vaillant fired at and killed the bird. In her craw he found, on dissection, eleven tolerably large lizards; three serpents, each two feet long; eleven small tortoises, most of which were about two inches in diameter; and a number of locusts and other insects, several of them sufficiently whole. He observed too, that, in addition to this mass of food, the craw contained a sort of ball, as large as the egg of a goose, formed of the vertebræ of serpents and lizards; shells of tortoises; and wings, claws, and shields, of different kinds of beetles.

#### THE BEARDED EAGLES, OR LAMMER GEYERS.

The bearded eagles, of which so many fabulous tales have been related, are inhabitants of the highest parts of the great chain of the Alps which separates Switzerland from Italy. They are frequently seen of immense size. One that was caught in the canton of Glarus, measured, from the tip of its beak to the extremity of its tail, nearly seven feet, and eight feet and a half from tip to tip of its wings; but some have been shot that were much larger.

They subsist on alpine animals, such as chamois, white hares, marmots, kids, and particularly lambs. It is from their devouring the latter, that they are called, by the Swiss peasants, *Lammergeyers*, or Lamb-Vultures. Gesner, on the authority of Fabricius, says, respecting it, that some peasants between Meissen and Brisa, in Germany, losing every day some of their cattle, which they sought for in the forests in vain, observed by chance a very large nest resting on three oaks, constructed with sticks and branches of trees, and as wide as the body of a cart. They found in this nest three young birds, already so large that their wings extended seven ells. Their legs were as thick as those of a lion; and their claws the size of a man's fingers. In the nest were found several skins of calves and sheep.

Bruce saw one of these birds on the highest part of the mountain of Lamalmon, near Gondar, the capital of Abyssinia. He supposed it to be one of the largest

birds in the creation. From wing to wing it measured eight feet four inches ; and from the tip of its tail to the point of its beak, when dead, four feet seven inches.

#### THE CHAUNTING FALCON

Is a native of Caffraria, and is about the size of the common falcon. During the breeding season the male of this species is remarkable for its song, which it utters every morning and evening, and, like the nightingale, not uncommonly all the night through. It sings in a loud tone for more than a minute, and after an interval begins anew. During its song it is so regardless of its own safety, that any one may approach very near to it ; but at other times it is suspicious, and takes flight on the slightest alarm. Should the male be killed, the female also may be shot without difficulty : for her attachment to him is such, that she continues flying round with the most plaintive voice ; and, often passing within a few yards of the gunner, it is an easy matter to kill her. But, if the female happen to be shot first, the affection of her mate does not prove so strong ; for, retiring to the top of some distant tree, he is not easily approached : he does not, however, cease to sing, but becomes so wary as, on the least alarm, to fly entirely away from that neighbourhood.

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As a beautiful illustration of the falcon tribe, we subjoin the following passage, on the death of a falcon, by an elegant contemporary poet :

Mars ! my brave bird, and have I killed thee ; then,  
 Who was the truest servant—fed me, loved,  
 When all the world had left me ? Never more  
 Shalt thou and I in mimic battle play,  
 Nor thou pretend to die, (to die, alas !)  
 And with thy quaint and frolic tricks delight  
 Thy master in his solitude. No more,  
 No more, old Mars ! (thou wast the god of birds)  
 Shalt thou rise fiercely on thy plumed wing,  
 And hunt the air for plunder : thou could'st ride,  
 None better, on the fierce and mountain winds  
 When birds of lesser courage drooped : I've seen  
 Thee scare the wandering eagle on his way,  
 (For all the wild tribes of the circling woods  
 Knew thee and shunn'd thy beak), and thro' the air  
 Float like a hovering tempest fear'd by all.



Have I not known thee bring the wild swan down  
 For me, thy cruel master? aye, and stop  
 The screaming vulture in the middle air,  
 And mar his scarlet plumage—all for me.

BARRY CORNWALL.

#### THE GREAT WHITE OWL

Is larger than the others of this class, (see Vol. III.), and its plumage is white as snow; its head is rather small, the bill is hooked, black, and almost covered with bristles; the pupil of the eye is encircled by a brilliant yellow iris; the head, body, wings, and tail, are marked with small brown spots; the legs and feet are covered with white feathers; and the nails are long, strong, black, and very sharp.

It is common in the northern parts only of the New Continent; in Lapland, Iceland, Sweden, and at Dantzic; and is never found southward; probably it is not adapted for the intense heats of the tropical countries.

#### THE PARROT TRIBE

Is remarkably distinct from all others. The beak is hooked all the way from the base to the tip, and the upper mandible, or division, is moveable. The nostrils are round, and placed in the base of the bill, which in some species is furnished with a cere. The tongue is broad and blunt; the head is large, and the crown flat. The legs are short, with two toes placed before and two behind, for the purpose of climbing.

The parrots are natives chiefly of tropical regions, where they live, for the most part, on fruit and seeds. They are gregarious, and excessively noisy and clamorous; yet, though they associate in vast multitudes, they live chiefly in pairs of one male and a female. The place they hold among the birds seems to be exactly that which the apes and monkeys occupy among the quadrupeds; for, like these, they are very numerous, imitative, and mischievous.

In a domestic state they are exceedingly docile, and very imitative of sounds; most of the species being able to counterfeit even the human voice, and to articulate words with great distinctness: but their natural voice is a loud, harsh, and unpleasant scream. Alexander the Great is supposed to have been the first who introduced parrots into Europe.

The BRASILIAN GREEN MACAW is a native of Jamaica

Guiana, and the Brasils. It is exceedingly jealous: it becomes enraged at seeing a young child sharing its mistress's caresses and favours; it tries to dart at the infant; but, as its flight is short and laborious, it can only exhibit its displeasure by gestures and restless movements, and continues to be tormented by these fits till she leaves the child, and takes the bird on her finger. It is then overjoyed, murmurs satisfaction, and sometimes makes a noise resembling the laugh of an old person. Nor can it bear the company of other parrots; and if one be lodged in the same room, it seems to enjoy no comfort.

The GUINEA, or LITTLE RED-HEADED PARROT is in brilliancy of plumage exceeded by few of its tribe. It is found amidst the forests of Guinea, and also in Ethiopia, Java, and the East Indies, where immense flocks of them are seen. The trading vessels from these countries seldom fail to bring with them considerable numbers of Guinea parrots; but they are so tender, that most of them die in their passage to our colder climate. It has also been observed, that the firing of a vessel's great guns is fatal to many of them, which drop down from fear.

The COMMON ASH-COLOURED PARROT is the well-known species which is now most commonly brought into Europe. It is superior to most others, both in the facility, and the eagerness with which it imitates the human voice: it listens with attention, and strives to repeat; it dwells constantly on some syllables which it has heard, and seeks to surpass every voice by the loudness of its own.

A parrot which Colonel O'Kelly bought for a hundred guineas at Bristol, not only repeated a great number of sentences, but answered many questions: it was also able to whistle many tunes. It beat time with all the appearance of science; and so accurate was its judgment, that, if by chance it mistook a note, it would revert to the bar where the mistake was made, correct itself, and, still beating regular time, go through the whole with wonderful exactness. Its death was thus announced in the General Evening Post for the ninth of October, 1802: "A few days ago died, in Half-moon-street, Piccadilly, the celebrated parrot of Colonel O'Kelly. This singular bird sang a number of songs in perfect time and tune. She could express her wants articulately, and give her orders in a manner approaching nearly to rationality. Her age was not known; it was, however, more than thirty years,



for previously to that period, Col. O'Kelly bought her at Bristol for a hundred guineas. The Colonel was repeatedly offered five hundred guineas a-year for the bird, by persons who wished to make a public exhibition of her; but this, out of tenderness to the favourite, he constantly refused. The bird was dissected by Dr. Kennedy and Mr. Brookes; and the muscles of the larynx, which regulate the voice, were found, from the effect of practice, to be uncommonly strong."

Dr. Goldsmith relates that a parrot, belonging to King Henry the Seventh, having been kept in a room next the Thames, in his palace at Westminster, had learned to repeat many sentences from the boatmen and passengers. One day, sporting on its perch, it unluckily fell into the water. The bird had no sooner discovered its situation, than it called out aloud, "A boat! twenty pounds for a boat!" A waterman, happening to be near the place where the parrot was floating, immediately took it up, and restored it to the king; demanding, as the bird was a favourite, that he should be paid the reward that it had called out. This was refused; but it was agreed that, as the parrot had offered a reward, the man should again refer to its determination for the sum he was to receive—"Give the knave a groat," the bird screamed aloud, the instant the reference was made.

Mr. Locke, in his Essay on the Human Understanding, relates the following anecdote concerning a parrot: During the government of Prince Maurice in Brasil, he had heard of an old parrot that was much celebrated for answering, like a rational creature, many of the common questions that were put to it. The curiosity of the Prince was roused, and he directed it to be sent for. When it was introduced into the room where the Prince was sitting in company with several Dutchmen, it immediately exclaimed, in the Brazilian language, "What a company of white men are here!" They asked, "Who is that man?" (pointing to the Prince:) the parrot answered, "Some general or other." When the attendants carried it up to him, he asked through the medium of an interpreter, "From what place do you come?" The parrot answered, "From Marignan." The prince asked, "To whom do you belong?" It answered, "To a Portuguese." He asked again, "What do you do there?" It answered, "I look after chickens!" The parrot in answer said, "Yes, I; and I know well enough how to do it;" clucking at the same time, in imitation of the noise made by the hen to call together her young ones.

Madame Nadault, sister to Buffon, had a parrot, which often spoke to his paw, and answered by holding it up. He loved the voice of children, yet hated themselves, pursued and bit them till he drew blood. He had also his objects of attachment; and though his choice was not very nice, it was constant. He was

very fond of the cook-maid, followed and sought her, and seldom missed finding her. If she had been some time out of his sight, the bird climbed with his bill and claws to her shoulders, lavished his caresses, and would on no account quit her; his fondness had all the marks of close and warm friendship. The girl happened to have a very sore finger, which was tedious in healing, and so painful as to make her scream; while she uttered her moans the parrot never left her chamber. The first thing he did every day, was to pay her a visit; and this tender condolence continued the whole time of the cure, when he returned to his calm settled attachment. Yet this strong predilection seems to have been more to the office of the girl in the kitchen, than to her person; for, when another cook-maid succeeded her, the parrot shewed the same fondness the very first day.

The COCKATOO is a beautiful bird of the parrot kind: its plumage is white, its beak round and crooked, and its head is adorned with a crest of long feathers, capable of being erected or lowered at pleasure, and give the bird a most striking fine appearance. It is a native of the Molucca islands, and other parts of the East Indies, where it is frequently known to build on the tops of houses. Like the rest of the parrot kind, it is capable of uttering sea phrases and sentences, with equal propriety of tone and volubility.

The power of imitating exactly articulate discourse, implies in the parrot a very peculiar and perfect structure of organ; and the accuracy of its memory (though independent of understanding) manifests a closeness of attention, and a strength of mechanical recollection, that no other bird possesses in so high a degree. Accordingly, all naturalists have remarked the singular form of its bill, of its tongue, and its head. Its bill, round on the outside and hollow within, has, in some degree, the capacity of a mouth, and allows the tongue to play freely: and the sound, striking against the circular border of the lower mandible, is there modified as on a row of teeth, while the concavity of the upper mandible reflects it like a palate: hence the animal does not utter a whistling sound, but a full articulation. The tongue, which modulates all sounds, is proportionally larger than in man: and would be more voluble, were it not harder than flesh, and invested with a strong horny membrane. From the peculiar structure of the upper mandible of its bill, the parrot



has a power, which no other birds have, of chewing its food. It seizes its food sideways, and gnaws it deliberately. The lower mandible has very little motion, but that from right to left is most perceptible; and this is often performed when the bird is not eating, whence some persons have supposed it to ruminate. In such cases, however, the bird may be only whetting the edge of this mandible, with which it cuts and bites its aliment.

#### THE DODO

Is larger than a swan, and weighs 45lb.; the head is not crested, and the general colour of the plumage is grey mixed with brown; the bill is strong, large, and hooked at the end; of a pale blue, the upper mandible yellow at the tip, and a red spot on the bend of it, the end of the lower blackish; the gape stretches beyond the eyes, which are black and lively; the irides are white; and the neck is of a proportionable length. It has a noble and elegant gait. The females are sometimes brown, and appear very beautiful; the feathers on each side of the breast enlarge into two white tufts, somewhat resembling the bosom of a woman. The feathers of the thighs are rounded at the end, like shells. It makes its nest in bye places, of dry leaves, to a great thickness, and lays only one egg at a time, the size of that of a goose. The time of incubation is seven weeks, during which the male, either sits while the female recruits herself, or watches, while she sits, so assiduously, as to prevent any bird approaching within 200 yards of the nest. The young is some months before it can provide for itself; the old ones are affectionate to it, and faithful to each other. The young bird, though timid, allows the approach of any person; but when older, is shy and will not be tamed.

#### THE TOUCANS

Are all natives of the hotter parts of South America, where they feed on fruit.

The RED-BELLIED TOUCAN is a native of Guiana and Brasil, and is about twenty inches in length. The bill is six inches long, and nearly two inches thick at the base; it is of a yellowish green colour, reddish at the tip. The nostrils are at the base of the bill; but are not, as in some of the species, covered with feathers. The principal upper parts of the body, and the throat and neck, are of a glossy black, with a tinge of green; the lower part of the

back, the rump, upper part of the tail, and small feathers of the wings, are the same, with a cast of ash-colour. The breast is orange coloured. The belly, sides, thighs, and the short feathers of the tail, are bright red: the remainder of the tail is of a greenish black, tipped with red. The legs and claws are black.

The females build their nests in the holes of trees; and no bird better secures its offspring from external injury than this. It has not only birds, men, and serpents to guard against; but a numerous train of monkeys, which are more prying, mischievous, and hungry, than all the rest. The toucan, however, sits in its hole, defending the entrance with its great beak.

The red-bellied toucans are easily tamed. Pozzo bred up one of these birds, and had it perfectly domesticated. Its bill was hollow, and on that account very light, so that the bird had but little strength in this apparently formidable weapon. But its tongue seemed to assist the efforts of this unwieldy machine: it was long, thin, and flat, not much unlike one of the feathers on the neck of a dunghill-cock; this the bird moved up and down, and often extended five or six inches from the bill. It was of a flesh-colour, and curiously fringed on each side with small filaments. It is probable that this long tongue has greater strength than the thin hollow beak that contains it; and that the beak is only a kind of sheath for this peculiar instrument, used by the toucan in making its nest, and in obtaining its provision.

#### THE ARACARI

Is a Brazilian bird, of the woodpecker species, and its size is equal to the common green woodpecker.

Its bill is four inches long, an inch and a half deep or broad, in the thickest part three inches and a half round, bending downwards, and sharp pointed like a parrot's; it is hollow, and as light as sponge; at its junction with the head, it has a triangular form, and is surrounded with a white line. The upper mandible, which is white, is larger and longer than the lower one; it is distinguished by a black line passing along the middle, or ridge, from head to point. The under jaw is wholly black, and both are deeply serrated above half way from the extremity. Its tongue, which is black, is four inches long, and wears the appearance of being feathered. Its head, which is not very large, is broad and compressed; its eyes are full, and have black pupils with yellow irides; and the length of its neck is not greater than a parrot's.



The body is about five inches long, from the rise of the neck to the tail; the tail, which is broad like the woodpecker's, is at least six inches long; the thighs are two inches, and the legs an inch and a half, in length. Like those of parrots, the legs and feet are black, or dark green, having two fore-toes, one larger than the other; and two back-toes, likewise, of unequal lengths. The talons are crooked, and of a black or dusky hue. The breast, and whole lower belly of this bird, are elegantly clothed with yellow plumes, intermixed with pavonine; and, from one side to the other, across the breast, there is a broad red stripe. The back, wings, tail, and thighs, are covered with feathers of a blackish green, not unlike those of the common magpie; and the end of the back, above the beginning of the tail, is of a deep red colour for a considerable length. The wings, which terminate at the rise of the tail, are lined with a dark ash colour; and the interior of the bill is black.

This bird has an odd cry, in which it nearly articulates its own name, "Arcari," with singular pathos. It bears considerable resemblance to the toucan, or Brazilian pye; and, judging from the conformation of its feet, it is palpably of the woodpecker kind.

#### BIRD OF PARADISE.

This extraordinary and beautiful bird, of which naturalists have enumerated many species, belongs to the family of the pye kind. Few birds have given rise to opinions and assertions so various and contradictory, as the Bird of Paradise. By some it has been described as an inhabitant of the air, subsisting entirely on the dew of heaven, and never lighting on the earth; others, though acquiescing in the latter part of its history, insist that it feeds upon the insects which hover in the air; whilst some have asserted it to be formed without legs, and rank it among birds of prey; and there are still others who affirm that its feet and legs are both large and strong.

The extreme dissimilarity between the structure of its legs, and the exquisite texture of the plumage of this bird, seem to have given rise to the most fallacious notions. Mandelso observes, that the native savages of the Molucca islands were particularly partial to keeping these birds, for the splendour of their plumage, and therefore, upon catching them, they eviscerated them, and cut off their legs close to their bodies, as they were extremely ill formed, and the skin of which closing up, left not the smallest appearance of their ever having had any. The



*The Social African Bird's Nest.*



*The Baltimore's Bottle Nest.*





Europeans naturally expressing an admiration at the beauty of this bird's feathers, and the natives discovering its legs as a great deformity, upon being asked after them, averred that it had none, lest their value should be diminished on being seen. Thus far the Europeans were imposed on by others ; but they afterwards deceived themselves. Observing a bird, in itself so lovely, destitute of legs, they concluded that it could only live in air, where those members were useless : the extraordinary splendour of its plumage aided the deceit, and, as it possessed celestial beauty, it was honoured by an imaginary celestial abode ; and from this circumstance, as well as from the multitude of erroneous reports which craft and ignorance have propagated concerning it, its appellation is derived. Time, however, has discovered the fallacy of these rumours, and it has been ascertained that this bird not only has legs, but that they are even disproportionably large and strong.

Of the birds of Paradise there are several kinds ; the one most generally sought after, is in appearance as large as a pigeon ; but its body, in reality, is not larger than that of the thrush.

The birds of paradise emigrate in flocks of thirty or forty, and have a leader, which the inhabitants of Arrou call the king. He is said to be black, to have red spots, and to fly far above the flock, which never desert him, but always settle in the same place that he does. They never fly with the wind, as in that case their loose plumage would be ruffled and blown over their heads ; and a change of wind often compels them to alight on the ground, from which they cannot rise without difficulty. When surprised by a heavy gale, they soar to a higher region, beyond the reach of the tempest. There, in a serene sky, they float at ease on their light flowing feathers, or pursue their journey in security. During their flight they cry like starlings ; but, when a storm blows in their rear, they express their distressed situation by a note somewhat resembling the croaking of a raven. In calm weather, great numbers of these birds may be seen flying, both in companies and singly, in pursuit of the larger butterflies and other insects on which they feed. Their general colour is chesnut, with the neck of a gold-green



beneath. The feathers of the back and sides are considerably longer than those of the body. They have two long tail-feathers, which are straight, and taper to the tip.

#### THE BOTTLE-NESTED SPARROW.

The Baya, or Bottle-nested Sparrow, is remarkable for its pendent nest, brilliant plumage, and uncommon sagacity. These birds are found in most parts of Hindostan; in shape they resemble the sparrow, as also in the brown feathers of the back and wings; the head and breast are of a bright yellow, and in the rays of a tropical sun have a splendid appearance, when flying by thousands in the same grove; they make a chirping noise, but have no song: they associate in large communities, and cover extensive clumps of palmyras, acacias, and date trees, with their nests. These are formed in a very ingenious manner, by long grass woven together in the shape of a bottle, with the neck hanging downwards, and suspended by the other end to the extremity of a flexible branch, the more effectually to secure the eggs and young brood from serpents, monkeys, squirrels, and birds of prey. These nests contain several apartments, appropriated to different purposes: in one the hen performs the office of incubation, another, consisting of a little thatched roof, and covering a perch, without a bottom, is occupied by the male, who, with his chirping note, cheers the female during her maternal duties. The Hindoos are very fond of these birds, for their docility and sagacity: when young, they teach them to fetch and carry; and at the time the young women resort to the public fountains, their lovers instruct the baya to pluck the tica, or golden ornament, from the forehead of their favourite, and bring it to their expecting master.

#### THE HUMMING-BIRD.

There are not less than sixty-five species of this very curious bird, all of them remarkable for the beauty of their colours.

Of these the MINIMUS, FLY BIRD, or LEAST HUMMING-BIRD, the most diminutive of the feathered tribe, may be cited as among the most interesting of the minute wonders of nature. It is exceeded, both in weight and dimensions, by several species of bees. Its total length is one inch and a quarter; and, when killed, it does not weigh more than about twenty grains. The bill is straight and



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Plate 1. 107. 288. Strand

AFRICAN BIRDS-NESTS.





black, three lines and a half in length : the upper parts of the body are of a greenish brown, in some lights appearing reddish : the under parts are greyish white ; the wings are violet brown ; the tail of a blueish black, with a gloss of polished metal ; but the outer feathers, except one on each side, are grey from the middle to the tip, and the outer one wholly grey : the legs and claws are brown. The female is still less than the male.

These birds, which are natives of the Brazils, of various parts of South America, and of the adjacent islands, subsist on the nectar or sweet juice of flowers, frequenting those most which have a long tube. They never settle on the flower during the act of extracting the juice, but flutter continually like bees, moving their wings very briskly, and making a humming noise, whence they have received their name. They are not shy ; but when very nearly approached fly off like an arrow from a bow. They often meet and fight for the right to a flower, and this all on the wing : in this state they often enter an apartment, the windows of which are open, fight a little, and go out again. When they come to a flower which is juiceless, or on the point of withering, they pluck it off as it were in anger, by which means the ground is often strewed with flowers. In flying against each other, they have, besides the humming, a chirping note resembling that of a sparrow. They do not feed either on insects or fruits ; but have been kept alive in cages for several weeks, by feeding them with sugared water.

The humming-bird is seldom caught alive ; a friend of M. du Pratz had, however, this pleasure. He had observed one of these birds enter the bell of a convolvulus ; and, as it had quite buried itself to get at the bottom, he ran immediately to the place, closed the flower, cut it from the stalk, and carried off the bird a prisoner ; but it died in a short time.

During his stay at the Brazils, Mr. Forbes visited almost daily a lovely valley in the neighbourhood of St. Sebastian. " There," he observes, " thousands of nature's choristers, arrayed in all the brilliancy of tropical plumage, enlivened the extensive orange groves ; and the humming-bird, the smallest and most lovely of the feathered race, buzzed like the bee, while sipping the nectareous dew from the blossoms of the flowers. Nothing can exceed the delicacy of these little beauties ; especially of that which, from its minuteness, is called the fly-bird ; its



bill and legs are not thicker than a pin ; its head, tufted with glossy jet, varies with every motion into shades of green and purple ; the breast is of a bright flame colour ; every feather, when viewed through a microscope, appears as if fringed with silver, and spotted with gold."

#### THE RED-THROATED HUMMING-BIRD

Is somewhat more than three inches in length, of which its bill occupies three quarters of an inch. The male is of a green-gold colour on the upper part, with a changeable copper gloss ; and the under parts are grey. The throat and fore-part of the neck are of a ruby colour, in some lights as bright as fire.—(*See the Engraving.*)—The female, instead of the bright ruby throat, has only a few obscure brown spots ; and all the outer tail-feathers, which in the male are plain, are in the female tipped with white.

This beautiful little bird flies so swiftly, that the eye is incapable of following its course ; and the motion of its wings is so rapid, as to be imperceptible to the nicest observer. It never feeds but upon the wing, suspended over the flower from which it extracts nourishment ; for its only food is the honeyed juice lodged in flowers, and this it sucks through the tubes of its curious tongue.

Fernandez Oviedo speaks of the spirited conduct even of these diminutive birds in defence of their young ones : " When they observe any one climbing a tree in which they have a nest, they attack him in the face, attempting to strike him in the eyes ; and coming, going, and returning, with almost incredible swiftness."

#### EDIBLE SWALLOWS.

The *HIRUNDO ESCULENTA*, the small swallow which forms the edible nests, is annually exported in large quantities from Java and the eastern islands for the Chinese market. These birds, Governor Raffles observes, in his history of Java, not only abound among the cliffs and caverns of the south coast of that island, but inhabit the fissures and caverns of several of the mountains and hills in the interior of the country. From every observation which has been made in Java, it has been inferred that the mucilaginous substance of which the nests are formed, is not, as has been generally supposed, obtained from the ocean. The birds, it is true, generally inhabit the caverns in the vicinity of the sea, as agreeing best



RED THROATED HUMMING BIRD.

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with their habits, and affording them the most convenient retreats to which to attach their nests; but several caverns are found inland, at a distance of forty or fifty miles from the sea, containing nests similar to those on the shore. From many of their retreats along the southern coast, they have been observed to take their flight in an inland direction, towards the pools, lakes, and extensive marshes, covered with stagnant water, as affording them abundance of their food, which consists of flies, musquitoes, gnats, and small insects of every description. The sea, which washes the foot of the cliffs, where they most abound, is almost always in a state of the most violent agitation, and affords none of those substances which have been supposed to constitute the food of the esculent swallow. Another species of swallow, in the island of Java, forms a nest, in which grass, moss, &c. are merely agglutinated by a substance exactly similar to that of which exclusively the edible nests consist. This substance, from whatever part of those regions the nests be derived, is essentially uniform, differing only in the colour, according to the relative age of the nests. It exhibits none of those diversities which might be expected, if, like the mud employed by the martin, and the materials commonly used in nest-making, it were collected casually, and applied to the rocks.

#### THE CRESTED MANAKIN

Is the size of a small pigeon, ten or twelve inches long. The bill is yellowish, about an inch and a quarter long. The head is furnished with a double round crest; the general colour of the plumage is orange, inclining to saffron; the wing coverts are loose and fringed; the quills are partly white and partly brown; the base half of the ten middle tail feathers of an orange colour; from thence to the ends they are brown; the outer feathers are brown, and the base half of the inner web orange; all are similarly fringed; the upper tail coverts are very long, loosely webbed, and square at the ends; and the legs and claws are yellow.

This beautiful species inhabits rocky situations in various parts of Surinam, Cayenne, and Guiana. The female lays two round white eggs, the size of those of a pigeon, makes the nest of a few dry bits of sticks, and they are in general very shy, but have been tamed so as to run at large among poultry. The female, after she



has laid eggs for some years, and ceases so to do more, becomes at the ensuing moult of the same colour as the male, and may be mistaken for him ; in this imitating the females of various kinds of poultry, such as the peacock, pheasant, &c.

A variety, called the PERUVIAN MANAKIN, is longer than the preceding, especially in the tail, and the upper coverts are not truncated at the ends ; the wing coverts are not fringed, as in the crested manakin, and the crest is not so well defined as in that bird ; the general colour of the plumage inclines much to red ; the second coverts and rump are ash-coloured ; the wings and tail black ; the bill and legs as in the last described.

The LOXIA of BENGAL, in its wild state, sits and builds upon the Indian fig or Banyan tree, and suspends its nest from the branches, in such a manner that the winds cannot injure it. In the two or three chambers of its nest, are fire flies often found ; which the Hindoos suppose are employed to illumine the apartments. The bird is so docile, that when a ring has been dropped into a well, it has instantly darted down with the greatest celerity, caught the ring before it reached the water, and returned with its prize to its master. It sometimes bears letters to a short distance, same as the carrier pigeon.

#### THE TAILOR BIRD

Is a native of India, and is a very small species, measuring scarcely more than three inches in length. Its nest is a very remarkable production. The exterior is constructed of two leaves ; the one generally dead, which the bird fixes, at the end of some branch, to the side of a living one, by sewing both together with little filaments, in the manner of a pouch or purse, and open at the top. In this operation the bill of the bird serves as a needle. Sometimes, instead of a dead leaf and a living one, two living leaves are sewed together. After the operation of sewing is finished, the cavity is lined with feathers and soft vegetable down. The nest and birds are together so extremely light, that the leaves of the most exterior and slender twigs of the trees are chosen for the purpose ; and, thus situated, the brood is secured.—(See the *Engraving*.)





TAILOR BIRD.





## THE CHINESE PHEASANT,

Though an inhabitant of the warmer districts of China, can, without difficulty, be kept in aviaries in our own country. The females are smaller than the males, have a shorter tail, and plumage of much less brilliant colour. In many instances, however, when old, they have been known, like the pea-hen, and the female European pheasant, to assume a plumage similar to that of the male.

Sir Hans Sloane kept a male Chinese pheasant nearly fifteen years, during the whole of which time it continued in perfect health. From this bird he obtained a mixed breed with the common pheasant. Of this breed the produce had a plumage much less beautiful than that of the Chinese species.

The PAINTED or ARGUS PHEASANT, so called from the number of eye-like spots with which its wing-feathers are covered, is found in the northern parts of China, and in several of the interior districts of India and Sumatra. They are nearly as large as peacocks, and rank among the most beautiful of the feathered creation. They are extremely wild, and very difficult to be kept alive for any length of time after they have been taken from the woods. In a strong light they appear dazzled, and when exposed to such they seem melancholy and inanimate; but in the dark they recover all their animation.—( *See the Engraving.* )



## LECTURE LXII.

## BIRDS (CONTINUED.)

## THE OSTRICH.

WHO in the stupid ostrich has subdued  
 A parent's care, and fond inquietude?  
 While far she flies, her scatter'd eggs are found,  
 Without an owner, on the sandy ground;  
 Cast out on fortune, they at mercy lie,  
 And borrow life from an indulgent sky:  
 Adopted by the sun in blaze of day  
 They ripen under his prolific ray.  
 Unmindful she, that some unhappy tread  
 May crush her young in their neglected bed,  
 What time she skims along the field with speed,  
 And scorns the rider and pursuing steed.

YOUNG.

THE ostrich, which is the largest of all birds, frequently attains the height of seven or eight feet, and upwards. Its long and slender neck is clad only with a kind of down. The head is small in proportion to the body; but the eyes are large and vivid. The beak is short, blunt, and flattened horizontally. The feathers have no strength or hardness: their stems are flexible; and the barbs or vanes do not catch upon each other, like those of most other bird. It is this which gives them their tendency to wave, and has caused them to be used as ornaments in head-dress. The wings of the ostrich are extremely short, when compared with the size of the body; and they are furnished only with these waving and flexible feathers. The thighs and legs are of astonishing strength. The feet have only two toes each, of which the outer one is much shorter than the other, and has no nail or claw.

The male is generally of a brown black colour—the plumage intermixed with white feathers. The female is entirely of a uniform greyish brown.

In the interior of its body, the ostrich presents many curious particulars. Its tongue is very short, somewhat in the form of a



NATURE DISPLAYED.



CHINESE PAINTED PHEASANT.





horse-shoe, and has a prominence behind, which some writers have taken for an epiglottis.

The membranaceous partitions which separate the lungs from the abdomen, are furnished with muscles which render them somewhat analogous to the diaphragm of quadrupeds.

Between the crop and the gizzard, there is a very great dilatation, which many persons have considered to be a separate stomach; and thus have attributed three stomachs to the ostrich.

The skeleton of the ostrich differs in some respects from that of other birds. The sternum has no keel-shaped prominence in front, but has only the appearance of a flat kind of shield. The toes, although very unequal in length, have each three phalanges; a number which is observed in no other animal, except the cassowary. The bones of the wings, although very short, have, nevertheless, the same number, and are even of the same forms, as those of other birds.

The sight of the ostrich is very strong; and its hearing is peculiarly good: but the senses of taste and smell are both weak. The ostrich swallows, indiscriminately with its food, stones, and even pieces of iron or copper. This habit has induced some writers to assert that the animal could digest iron. The pieces of metal found in the ostrich's stomach, have, in some instances, appeared not to have been worn, as if by trituration with other hard bodies, but to have been eaten or corroded by some juice, as is evident from the inequality of the hollows or clefts produced by that juice. This was proved from the contents of the stomach of the individual represented in the engraving which accompanies the present account. The fragments of nails, &c. which it had swallowed, exhibited all the indications of true corrosion.

In 1804, an ostrich was brought to New York from the Cape of Good Hope, and died on the first of June following. On the 19th of May, this animal swallowed a small cotton handkerchief; and it picked up, and swallowed, every day, a considerable quantity of gravel, besides many pieces of china, queen's ware, glass, broken nails, and all kinds of metallic substances which it could find, of such size as to be admitted into its stomach. Its usual food was bread, potatoes, corn, and grass, which it continued to eat in great quantity during the first eight days after it had swallowed the handkerchief: but, in the beginning of the second week, it lost its appetite; and it was considered necessary to cram it, in order to keep it alive. This, however, proved ineffectual; and it did not survive more than three or four days. On the day following that of its death, the body was opened in the presence of several medical gentlemen of New York; and, on examination, the stomach was found to be so full, as to be considerably distended. It contained a quantity of partly digested grass, mixed with corn



and potatoes undigested ; and a great quantity of gravel, pieces of earthen ware and glass, some brass buttons, old nails, a piece of a small key, and several other things. The handkerchief was found uninjured on the top of the contents of the stomach ; and it was thought that this had caused an indigestion, which had at least accelerated the death of the animal. It could not, however, in all probability, have lived much longer, on account of a general inflammation which was discovered on the outside of the stomach, on the breast and rump, occasioned by some severe bruises which it had received either on board the vessel, or when it was shipped. The pieces of iron that were found in its stomach, some of which appeared to have been swallowed a great length of time, are said by the examiners to have undergone very little alteration, further than what might be accounted for by their friction against each other, caused by the powerful action of the gizzard.

An ostrich described by Cuvier, in the Menagerie of the Museum at Paris, was excessively voracious ; and, although grain and vegetables constituted the basis of its nourishment, it would indiscriminately devour all kinds of substances, both vegetable and animal. It seemed most fond of barley ; and would eat, every day, about four pounds of this, with a pound of bread, and ten or twelve lettuces. In the summer time, it drank four pints of water in the day ; and in winter, when it was necessary to keep it confined, it would drink more than six. This circumstance completely refutes the assertion of the Arabs, mentioned by Buffon, that the ostrich never drinks. It very frequently would throw the water over its body, and afterwards roll upon the ground.

Ostriches often become excessive fat. The last mentioned animal, when it was dissected, had fat to the thickness of two or three fingers in several parts of its body.

They have great muscular strength, particularly in the legs : in running, they often throw behind them very heavy stones to a considerable distance. The rapidity of the course of the ostrich surpasses that of all known animals ; and is such, that those persons who mount on its back, without having, by degrees, habituated themselves to the exercise, are at first nearly suffocated. The wings, by beating against the air, serve to accelerate its speed : but they are not of sufficient size to enable the animal to elevate its body in the least degree from the ground.

With respect to instinctive faculties and sagacity, the ostrich is generally said to be much below most other animals. The people of the countries which it inhabits consider it even as an emblem of stupidity ; they assert



*Nesle & son 350 Strand*

**FEMALE OSTRICH.**

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that it will hide its head behind a tree or other object, when pursued by the hunter, and there remain immovable, as if its whole body was concealed. This, however, is by no means the fact. Its cry is weak, and somewhat resembles the cooing of a pidgeon. The voice of the male differs from that of the female, chiefly in being more strong. When the animal is teased, it threatens by a kind of hissing noise, not much unlike that of a goose. It likewise indicates its anger by raising and shaking its wings and tail.

In 1802, a female ostrich in the Museum at Paris deposited, in the space of two months, six eggs. The one of these which appeared most perfect, and which was as large as most of the eggs of ostriches that are brought to Europe, was examined in the scales immediately after it was laid, and was found to weigh nearly three pounds. In the exaggerated relations of some naturalists, it is asserted that the eggs of the ostrich sometimes weigh as much as fifteen pounds. A large shell, preserved in the cabinet of the Academy of Sweden, weighed eleven ounces. It was ten inches and a half in length, and would have contained upwards of four pints of water.

At the Cape of Good Hope, the eggs of ostriches constitute an important article of commerce. The Arabs frequently carry great quantities of them to Cairo and other towns of Egypt, where they meet with a ready sale, not only as articles of food, but likewise for the purpose of ornamenting the mosques and churches with the shells. The Mahometans of the interior of Africa place the eggs of ostriches on the top of the spires of their mosques. The shells are frequently employed as ornaments for the persons of the Hottentots. They make collars and girdles of them, by grinding small pieces into the form of rings.

In its wild state, the ostrich, according to the assertion of Aristotle, lays as many as twenty-five eggs; according to Willoughby and Linnæus, fifty; and, according to Ælian, as many as eighty. This error, says Thunberg, has arisen from an ignorance in those writers that the animals were polygamous, and that three or four females deposited their eggs in the same nest. The shells are sufficiently thick to admit of their being cut into, and used as drinking-vessels. Without the torrid zone, it is



said that the ostriches frequently leave their eggs to be hatched by the heat of the sun ; but that within the tropics they incubate in the manner of other birds, and that they will guard and defend their offspring with great courage. The period of incubation is stated to be six weeks.

Buffon asserts that, when Jannequin was in Senegal, two eggs, taken from an ostrich's nest, having been presented to him, he wrapped them up in tow, and put them into his chest ; where, after some time, he discovered, that, from one of the eggs, a young bird had been produced. The following is a translation of the original passage inserted in his *Voyage de Lybe au Royaume de Senega, le long du Niger, &c.*

“ The ostrich lays very large eggs, and, instead of seeking to conceal them, does not herself sit on, but abandons them to the heat of the sun, leaving them to be hatched by the powerful rays of that eye of the universe. A negro having made me a present of two of these eggs, which I was desirous of carrying to France, I deposited them in my chest, carefully wrapped up in tow, lest they should be broken. They were left here for a long time without being seen ; and one day, on opening the chest, I was greatly astonished to find that one of the shells was broken. Without attempting to ascertain by what means the accident had happened, I took it up, with the intention of throwing it out, when, to my infinite surprise, I observed a young ostrich moving under the thick skin of the egg. As there was no opening in this, I made one with my knife, in order to give the animal air ; and I carefully replaced it in the chest. It lived for eight days, during which time I fed it with pieces of vegetables, which it readily took into its beak and swallowed. The same circumstance, no doubt, took place in the other egg ; for, on my return to France, I found that the shell of that also was broken.”

The ostrich is an inhabitant of nearly all parts of Africa, from Barbary almost to the Cape of Good Hope ; and it delights principally in arid and sandy desarts. It is likewise very common in Arabia, and is sometimes, though rarely, found in other parts of Asia.

These birds traverse the desarts in great troops. The Arabs pursue them on horseback, and sometimes with dogs ; and they occasionally catch them by means of nets and other snares. Those that are taken alive are easily

amed: they will allow men to mount on their backs; but they are by no means so easy to be guided as a horse.

The skin of the ostrich, ornamented with the feathers, serves some of the tribes of the Arabs to make shields and breast-plates. It is well known that the great feathers of the wings and tail are employed in Europe as ornaments for dress, furniture, &c. and they have been used for that purpose from the remotest period.

The ostrich, inhabiting some of the countries that were most anciently peopled, is consequently one of those animals which have been known and celebrated from the highest antiquity. It is frequently mentioned in the Old Testament; and in the book of Job, particularly, it is spoken of with great precision. Herodotus was the first of the Greek writers who noticed it; but those who followed, were so exact in their accounts, as to have left very little for the discovery of the moderns. The Romans had ostriches frequently exhibited in their games, among other singular and remarkable animals from Africa. They were often served up at the tables of the emperors: it is said that Heliogabalus sometimes had dishes at his table wholly consisting of the brains of these birds.

#### THE CASSOWARY

The body of the cassowary is extremely heavy, and its wings are so short, that it has no power to raise itself from the ground in flight. The quills of which the wings are composed, are five in number; they are strong, distant from each other, and without barbs. They are, in short, so many spines; and are given to the animal as weapons of defence against its enemies. The beak is about five inches long, somewhat curved, and of very hard substance. A bony protuberance, covered with horn, and of a blackish brown colour, forms on the top of the head a sort of helmet. The skin of the head and neck is entirely naked, and is of a fine blue colour above, and red below. On each side of the front of the neck, hangs a long light blue caruncle or wattle. The body is covered with black feathers, which, at a little distance, have the appearance of hair. The thighs are each about eighteen inches long, and are covered with feathers almost to the knees. The legs are remarkably stout; the toes of each foot are only three in number, and the nail of each internal toe is about twice the length of any of the others.

This bird will swallow almost every thing large enough



to pass down its throat, that is presented to it. It is particularly fond of fruit, and of the eggs of poultry; but it is not able to eat any kind of grain, as the tongue is so formed as to have no power of guiding it down the throat.

A cassowary kept in the Menagerie of the Museum at Paris, devoured every day three pounds weight and a half of bread, six or seven apples, and a bunch of carrots. In summer, it drank about four pints of water in the day; and in winter somewhat more. It swallowed all its food without bruising it.

The cassowary, when pursued, runs almost as swiftly as the ostrich. According to Clusius, it, at each step, throws its foot backward with a considerable jerk. In confinement, it walks gently, and not usually at a quick pace; but it will sometimes run and even leap, though this is done very heavily and with much noise. Valentyn informs us, that when the cassowary runs very swiftly, it appears as if it was partly dancing and partly flying. It is a very vigorous and powerful animal. Its beak being in proportion much stronger than that of the ostrich, it has the means of defending itself with great advantage.

The cassowary was unknown in Europe till about the year 1507, when the Dutchmen, on their return from their first voyage to India, brought one from Java. This bird was given to them by the reigning prince of that island. It was during a considerable while exhibited at Amsterdam, for money: it was then sold to the Count de Solms, who gave it to the Elector of Cologne; and by him it was presented to the Emperor of Germany. In the course of the ensuing six years, the Dutch merchants shipped two others from the same place, but both of these died during the voyage. In the year 1671, a cassowary was sent by the governor of Madagascar, to the king of France, which was kept alive for four years, in the royal Menagerie at Versailles. Since this period, cassowaries have been frequently brought into Europe, and as they bear the climate of Europe much better than most animals imported from the torrid regions, there are few countries in this part of the world entirely without them.

Cassowaries are frequently kept in the court yards of houses in their native countries: but having a considerable space to range in, though deprived of liberty, they are said to retain a great inclination to mischief. In Sir George Staunton's account of the embassy of Lord Macartney to China, we are informed that a magistrate of

Batavia had in the poultry-yard of his house, a great number of cassowaries, and although these had been long in his possession, and were in some measure domesticated, yet their native ferociousness sometimes returned upon them, and they would, without any provocation, savagely attack with their beaks and feet, such persons as incautiously approached too near them.

Cassowaries are found only in the eastern parts of the South of Asia, that is, in the peninsula of India, beyond the Ganges, and in the islands of the Indian Archipelago; but they are not very numerous in any of these places. The deep forests of the island of Ceram, along the southern coast from Elipapoeth almost to Kelemori, contain great numbers of these birds. They are likewise found in Bouton, and in the islands of Aroe; but the latter are somewhat different from the others, particularly in their eggs, which are less beautiful, and of which the spots are of longer shape, and more confused in the marking. Although this bird is domesticated in Amboyna, it is not a native inhabitant of that island: according to the relation of M. Labillardiere, it was conveyed thither from islands situated to the eastward. The naturalists who accompanied the expedition of Entrecasteaux, observed some cassowaries on the south-east coasts of New Holland; but these, most probably, were of another species, namely, that described in the work on Botany-Bay, which was published *under the name of Governor Philip*, and there called the New Holland cassowary.

#### THE FLAMINGO.

This bird resembles the heron in shape, but the form of the bill is very singular. At two years old it arrives at its perfect colour, entirely red, except the quill-feathers, which are black. A full-grown bird, of equal weight with a wild duck, when erect, stands five feet high. The feet are webbed. These birds make their nests on hillocks in shallow water; on which they sit with their legs extended down. They breed on the coasts of Cuba and the Bahamas, and frequent salt-water only. By reason of the particular shape of its bill, this bird, in eating, twists its neck from side to side, and makes the upper mandible touch the ground.



These birds prefer a warm climate. In the old continent they are seldom met with beyond forty degrees north or south. They are met with everywhere on the African coast and adjacent isles, to the Cape of Good Hope ; and sometimes on the coasts of Spain, Italy, and those of France in the Mediterranean Sea ; at times at Marseilles, and some way up the Rhone. In some seasons they frequent Aleppo and the parts adjacent. They are seen also on the Persian side of the Caspian, and thence along the western coast as far as the Wolga. They breed in the Cape Verd isles, particularly in that of Sal. They go for the most part together in flocks, except in breeding time. Dampier says, that, with two more in company, he killed fourteen at once, which was effected by secreting themselves ; for they are so very shy, that they will by no means suffer any one to approach openly near enough to shoot them. They are very numerous at the Cape ; keeping in the day on the borders of the lakes and rivers, and lodging at night in the long grass on the hills. They are also common to various places in the warmer parts of America, frequenting the same latitudes as in other quarters of the world ; being found at Peru, Chili, Cayenne, and the coast of Brasil, as well as the various islands of the West Indies. When seen at a distance, they appear as a regiment of soldiers, being ranged alongside each other, on the borders of the rivers, searching for food, chiefly small fish or their eggs, and water insects, which they search after by plunging in the bill and part of the head, from time to time trampling with their feet to muddy the water, that their prey may be raised from the bottom. Whilst they are feeding, one stands sentinel, and the moment he sounds the alarm, the whole flock take wing.

#### THE ALBATROSS

Is one of the largest and most formidable birds of Africa and America, abounding particularly about the Cape of Good Hope, Cape Horn, and some other places. The body is rather larger than that of a pelican ; and its wings, when extended, are ten feet from tip to tip. The bill, which is six inches long, is yellowish, and terminates in a crooked point. The top of the head is of a bright brown ; the back is of a dirty deep spotted brown ; the belly is



THE FLAMINGO.





white; and the toes, which are webbed, are of a flesh-colour. This bird is one of the most fierce and formidable of the aquatic tribe; not only preying on fish, but likewise on such small water-fowl as it can take by surprise. It preys, after the manner of all the gull tribe, on the wing; and chiefly pursues the flying fish, when driven from the ocean by the dolphin. In our northern seas, one dreary expanse, ruffled by winds, and seemingly abandoned by every class of animated nature, presents itself; but in the tropical seas, and the distant southern latitudes, the scene is filled with birds and fishes pursuing and pursued. Every different species of the gull kind is there seen hovering on the wing, and at an immense distance from the shore. The flying-fish is continually rising to elude its enemies in the deep; but, in escaping one danger, it generally falls into another equally fatal. Just as it rises, the dolphin is seen to dart after it, though generally in vain; but the gull has more frequent success, and often catches it at its rise; while the albatross, pursuing the gull, compels it to relinquish its prey. Thus the whole horizon presents one general scene of rapacity and cunning, of stratagem and evasion.

“As the albatross,” says Wicquefort, “except when it breeds, lives entirely remote from land, so it is often seen, as it should seem, reposing in the air. At night when it is pressed by slumber, it rises into the clouds, as high as it can; where, putting its head under one wing, and beating the air with the other, it seems to enjoy its ease. After some time, however, the weight of its body, only thus half supported, brings it down; and it is then seen descending, with a pretty accelerated motion, towards the surface of the deep: on this, it again exerts itself to rise; and thus, alternately, ascends and descends at its ease. But during these uncommon, slumbering flights, it frequently loses its equilibrium; and, falling on the deck of some ship, becomes an easy prey to the mariners.”

Although this bird may justly be deemed one of the most dreaded tyrants of the deep, it does not indiscriminately prey on every animal, and entirely relinquish association with other creatures. Between the penguin and the albatross there seems to be a peculiar affection: they are always seen to choose the same breeding places, which



are generally distant, unfrequented islands, in which the ground slopes downwards to the sea, the penguin being formed neither for flying or climbing. In such situations, their nests are contiguous, as if they stood in need of mutual assistance and protection.

The union preserved between these birds, and the regularity with which they build their nests, are, indeed, astonishing. On the Falkland islands, those bleak and desolate spots, where these birds had long continued undisturbed, and in no respect dreaded the encroachments of men, they seemed to make their habitations as convenient as if they expected them to be permanent: they built them with an amazing degree of uniformity, and their abodes seemed to form a regular plantation. In the middle, the albatross raised its nest, on heath sticks and long grass, about two feet from the surface of the ground; and round this the penguins constructed their inferior accommodations, by making holes in the earth, the general proportion they observed being that of eight penguins round one albatross. But as these islands are now more frequented than formerly, the penguin and the albatross have forsaken them, and sought some more obscure retreat: a striking confirmation of Buffon's judicious remark, "That the presence of man not only destroys the society of meaner animals, but likewise serves to extinguish their instincts."

#### THE SCARLET IBIS.

The ibis was formerly held in great veneration in Egypt, on account of its utility in freeing the country from serpents.

When Egypt was in its prosperity, the country was inhabited much farther than at present, even a considerable way into the sandy desert of Libya, the abode of serpents. These parts were supplied with water by immense lakes, dug by the magnificent princes of those times, and filled by the annual inundation of the Nile. These frontier districts were naturally infested with vipers from the Libyan desert, and the vast lakes were as reasonably supplied by numbers of water-fowl, of which the ibis is a species. This bird being likewise an enemy to serpents, the inhabitants soon became acquainted with its use, and their superstition soon rewarded it. In after ages, however, when the ancient improvements were lost, and the vast lakes dried up which brought the ibis thither, the serpents ceased to give any offence, none of the human species being there whom they could annoy; and in consequence of the want of water, the birds ceased to annoy them, retiring to their native place Ethiopia, where they continue to frequent the great stagnant pools common in that country.



THE SCARLET IBIS.





## THE PELICAN.

This bird is much larger in the body than a swan and, somewhat of the same shape and colour. Its four toes are webbed together; and its neck resembles that of a swan, with that singularity from all other birds in the bill and the great pouch underneath; this bill is fifteen inches from the point to the opening of the mouth, which is far back behind the eyes; at the base greenish, but towards the end of a reddish blue; very thick at the base, but tapers off to the end, where it hooks downwards. The under-chap is more extraordinary; for to its lower edges hangs a bag, reaching the whole length to the neck, capable of containing fifteen quarts of water, which bag the bird can wrinkle up into the hollow of the under-chap; but by opening the bill, and the hand down, it may be distended at pleasure. The skin then is of a blueish ash-colour, with many fibres and veins; it is covered with a short down substance, as smooth and as soft as satin, and attached to the under edges of the chap, fixed backward to the neck of the bird by proper ligaments, and nearly half way down.

When this bag is empty, it is not seen; but when the bird has fished with success, its extent is then incredible. The pelican in fishing first fills up the bag, and then returns to digest its burden at leisure. When the bill is opened to its widest extent, a person may run his head into the bird's mouth, and conceal it in this monstrous pouch, thus adapted for very singular purposes. The sides of the under-chap, from which the bag depend, are not above an inch asunder when the bird's bill is first opened; but they are capable of great separation, as the bird preys upon large fishes, and hides them by dozens in its pouch. This amazing pouch is analogous to the crop in other birds; but theirs lies at the bottom of the gullet, and this is placed at the top. Thus, as pigeons and other birds macerate their food for their young in their crops, and then supply them; so the pelican supplies its young by a more ready contrivance, and macerates their food in its bill, or stores it for its own particular sustenance.

The pelican was once known in Europe, particularly in Russia; and is the bird of which fabulous accounts have been propagated, of its feeding its young with its own blood, and carrying in the desert a provision of water for them; the absurdity of the first account is obvious; and



as for the latter, the pelican uses its bag for very different purposes than that of filling it with water.

The pelican has strong wings, furnished with thick plumage, with the feathers over the body of an ash-colour. Its eyes are small, compared with the size of its head; its countenance sad, and its whole air melancholy. It is as dull and reluctant in its motions, as the flamingo is sprightly and active. It is slow in flight, and rises to fly with difficulty and labour. Only the spur of necessity makes these birds change their situation, or induces them to ascend into the air; when they must either fly or starve.

Their indolence is exceeded only by their gluttony; hunger excites to labour, else they would continue always in repose. When about thirty or forty feet above the surface of the sea, they turn their head with one eye downwards, and continue to fly in that posture. As soon as they perceive a fish sufficiently near the surface, they dart down upon it with the swiftness of an arrow, seize it, and store it in their pouch. They then rise again, with great labour, and continue hovering and fishing with great effort, till their bag is full, when they fly to land to devour and digest at leisure their prey. Towards night they have a hungry call, and again reluctantly go to labour. At night, when fishing is over, and the toil successful, they retire a short distance from the shore; and, though with the webbed feet and clumsy figure of a goose, they perch upon trees among the light and airy tenants of the forest; take their repose for the night; and often spend much of the day (except when they are fishing), sitting in dismal solemnity, and half asleep, with the head resting upon their great bag, and that resting upon their breast. Thus, they remain without motion, or change of situation, till hunger breaks their repose, and it is indispensable to refill their magazine.

#### THE CORMORANT.

There are several species of this bird. The species which was formerly common in this country is described in Vol. III. The CHINESE FISHING CORMORANT is thus described by Sir George Staunton:

“The embassy (he says) had not proceeded far on the southern branch of the Imperial Canal, when they arrived in the vicinity of a place where the Leutz, or famed fishing-bird of China, is





THE PELICAN.





bred, and instructed in the art and practice of supplying his owner with fish in great abundance.

“ On a large lake close to this part of the canal, and to the eastward of it, are thousands of small boats and rafts, built entirely for this species of fishing. On each boat or raft are ten or a dozen birds, which, at a signal from the owner, plunge into the water; and it is astonishing to see the enormous size of the fish with which they return, grasped within their bills. They appeared to be so well trained, that it did not require either ring or cord about their throats, to prevent them from swallowing any portion of their prey, except what the master was pleased to return to them for encouragement and food. The boat used by these fishermen is of a remarkably light make; and is often carried to the lake, together with the fishing birds, by the men who are there to be supported by it.”

Buffon says, that they are regularly trained up to fishing, as men rear spaniels or hawks, and one man can easily manage a hundred. The fisherman carries them out into a lake, perched on the gunnel of his boat; where they continue tranquil, and wait for his orders with patience. When arrived at the proper place, on the first signal, each flies a different way, to fulfill the task assigned to it. It is pleasant on this occasion to behold with what sagacity they portion out the lake or canal where they are upon duty. They hunt about, they plunge, they rise a hundred times to the surface, until they have at last found their prey. They then seize it by the middle, and carry it to their master.

#### THE RED-TAILED TROPIC BIRD.

The birds of this genus have obtained their common title of Tropic-Birds from being found within the Tropics; a circumstance so generally remarked that it affords one of the most common nautical observations relative to approaching those regions. These birds may be said to soar “ with no middle wing,” since their ascent is so uncommonly lofty, and so powerfully rapid, as quickly to raise them beyond human view. From these elevations they descend occasionally to seek for prey, and darting down with great velocity seize on and devour the smaller fish, which form the principal article of their food. Tropic-birds differ principally in colour, the common bird being of a beautiful silvery white, thickly traversed in the upper part of the body with short limulated streaks of black;



while the red-tailed bird is of a pale rose colour. The two middle tail feathers, which greatly exceed the rest in length, are of a deep and beautiful crimson. The beak is of a fine red, and the legs blackish. The long feathers of the tail are highly esteemed by the natives of many of the tropical regions, and are much used in the ornamental dresses of the natives of the Southern Island. They are particularly conspicuous on the awful and elegant ceremonial habits worn by the priests at Otaheitee; as well as on those of the chief mourners at funerals in that island, which are furnished with a mask or vizor of nacre or mother of pearl shell, surrounded by the tail feathers of these birds, evidently intended to represent the solar beams, and disposed so as to imitate the diverging rays of that luminary.

#### GULLS.

The Gulls frequent chiefly the northern countries, and their habits differ from those of most other water-fowl. They do not dive so much as others; but they usually feed on the gregarious species of fish and their fry, which they catch near the surface of the water. When the sea is rough they come into the harbours, where they feed on worms. Some of them occasionally devour carrion; and Mr. Stackhouse, of Pendarvis in Cornwall, took from the craw of one of the common species, nearly a pint of the small fern-chafer, *Scarabæus horticola*. They are exceedingly voracious; and, when terrified, throw up their undigested food. By the lightness of their body, and the length of their wings, they are enabled to fly with considerable rapidity. The young-ones do not become of the same colour with the old birds until their third year.

#### THE SKUA GULL

Inhabits Norway, the Fero islands, and other parts of the north of Europe. It is the most formidable bird of its tribe; its prey being not only fish, but (what is wonderful in a web-footed animal) all the lesser sorts of water-fowl, and (according to the account of Mr. Schroter of the Fero Isles) ducks, poultry, and even young lambs.

In defending its offspring, it has the courage of the eagle. When the inhabitants of the Fero islands visit the nest of the Skua gull, the parent birds attack them with such force, that, if they hold a knife perpendicularly

over their heads, the gulls will sometimes transfix themselves in their fall on the cruel plunderer.

THE ARCTIC GULL. *Larus Parasiticus*.

Some authors consider the white-breasted Arctic gull as a species distinct from the brown, while others maintain it to be the male, the latter being the female. In the size, general appearance, form, modes of life, habits of migration, and anatomical structure, these two birds perfectly coincide. They breed in the same situations, and promiscuously ; and single pairs, sometimes of two brown, or two white-breasted ones, or of a brown and white, with their nest and eggs, are often found on one separate hill, so far removed from other haunts, more numerously occupied by their species, as to render this proof little subject to suspicion. This remark of their promiscuous pairing will also be strikingly confirmed by traversing the heaths where they are most frequent.

On a heathy hill, in the island of Unst, Zetland, which has long been a favourite resort of the Arctic gull, and where some years ago more than fifty pair were seen, in 1821 five only were found. They were observed to be gradually decreasing in number, from the hill being constantly exposed to the depredations of idlers in quest of their nests. The few that remained were all white-breasted, with one brown individual only. This seems another presumption for the opinion, that the brown is merely the Arctic gull in imperfect plumage,—for, from hardly any of the young being reared on this spot, and from the general fact, that certain families of migratory birds, and their descendants, regularly occupy certain situations, it may be concluded, that, in this instance, only some of the old stock could have been able to remain.

During the breeding season, this species confines itself mostly to the heaths, feeding chiefly on the insects that frequent the marshes. Occasionally a straggler dashes along the shores, to the terror and annoyance of the terns and lesser gulls. The kittiwake seems peculiarly the victim of its persecution ; but indeed scarcely any birds of its size are secure from the attacks of this aquatic hawk : when stimulated by hunger, it hesitates not to assault and harass them, to compel them to disgorge their food. Mr. Edmondston once witnessed a very animated and amusing chase of this kind, when the game was the common wild pigeon. This bird, which displays great agility and rapidity of flight, the Arctic gull seemed as easily to over-



take, as had a hawk been pursuing a heron. In the celerity of its flight, and the precision with which it hit its object, it far surpassed any hawk, and for which the terrified pigeon seemed to take it. The joint of the wing projecting so as to form a kind of spine, its rapidity of flight, muscular energy, and bold disposition, must render it a very formidable opponent. It is not easily domesticated, unless taken very young, although so bold and familiar in its native state.

The voice is very similar to that of the kittawake, but stronger, and not so well defined. Both these species follow nearly the same periods of migration, and, it is supposed, visit the same latitudes. It is curious, however, that while some of the young of the kittiwake remain throughout the winter in Zetland, no instance is known where an individual of the Arctic gull has been met with there during that season.

Of the multitudes of the *Larus rissa*, or *Kittiwake*, that annually arrive in Zetland to breed, large flocks are observed to keep apart from those which repair to the usual haunts for incubation, resting on the water, or on low rocks; and, from their not breeding, are termed, in the dialect of the country, *Yeeld Kittiwakes*. This singular fact in their history has been illustrated by Dr. Edmondston, in his "View of the Zetland Islands."

At a particular time of the tide the herrings descend from the surface, and, during the interval of their absence, these gulls generally repair inland, and rest amongst the heaths. As soon, however, as the tide changes, and the herrings again rise, they tumultuously quit their retreats, and, by their wild and discordant screams, express to each other the anticipated joy of their approaching feast. When they take wing, it is a sign that the period of fishing is at hand. The precision and regularity with which flocks, far removed from the view of the sea, seem, from a state of tranquillity and repose, suddenly to display bustle and activity, and instantly bend their course to the fishing-ground, is truly surprising.

The kittiwake, like most of the gulls, is frequently on wing, and is a very industrious and expert fisher. Its usual mode of catching its prey is, like the gannet or the tern, to precipitate itself with sudden velocity from the

air, several feet beneath the surface of the water. It is familiar, and easily tamed ; but, apparently from the delicacy of its constitution, it seldom lives long in confinement. It is subject to a disease very similar to the tubercular phthisis of the human species. This species lays two eggs, and its young is now generally admitted to be what was so long described as a distinct species, under the name of *Larus tridactylus*.

In Zetland, a few of the young of the kittiwake remain during the winter, and they are sufficiently clearly marked throughout that season by the black bill, bars of the same colour across the wings, at the tips of the tail-feathers, and almost surrounding the neck. It is termed in Zetland *Craa maa*, or the Crow gull, though they apply there the same name to the young kittiwakes after they have begun to fly, much in the same way as they denominate the young of two or three other species of gull *Soree*.

#### THE BLACK GUILLEMOT, OR COLYMBUS GRYLE.

Some obscurity still exists regarding the history of this species. One opinion maintains, that this species changes its black summer plumage to a grey mottled appearance in winter. Another considers this difference of appearance to depend on difference of species,—while a third refers it merely to the distinction of age ; the black being the adult, the grey the young bird.

The black guillemot has been stated to produce only one young during the year. It, however, lays two eggs ; and very seldom indeed is its nest found without two young ones. If this species do not migrate from Zetland during the winter, it ought then to occur there at that season in considerably greater numbers than in summer. The number, on the contrary, is certainly less. Thus, partial migration takes place ; and the old migrate, while the greater part of the young remain behind. The departure of the black individuals occurs soon after the young have quitted the cliffs ; and when migration might be expected to take place. This disappearance is general and sudden. The reappearance of the black in spring is also sudden, and the number of this species at that season appears also greater than in winter, and it is in spring that the different steps of change, from the grey to the black, are well marked.

The general habit of this genus is to carry the young to sea some time before they are capable of using their



wings for flying, at least to any considerable distance; and, hence from deriving their food chiefly from diving, and from the comparative absence or disuse of flying, we naturally might expect that the greater part of the young would be unfit for distant or protracted migration, at the period of the disappearance of the old birds.

Mr. Edmondston, of Zetland, who has written much on the habits of Sea Gulls, asserts, that the grey guillemots found in Zetland in winter, are merely the young of the black guillemot remaining behind, while the parent birds migrate, and perhaps carry along with them a few of the more advanced and vigorous of their young.

#### THE CRANES.

Mark how, when sullen clouds appear,  
And wintry storms deface the year,  
The prudent cranes no longer stay,  
But take the wing, and thro' the air  
From the cold region fly away,  
And far o'er land and seas to warmer climes repair.

There are several species of this order, the most remarkable of which are :

The CROWNED CRANE, a native of Africa, and often kept in our menageries; and, when sheltered during the night, will live some years.—(*See the Engraving.*)

The GREY CRANE, is found in many parts of Africa and Asia. It puts itself into very uncouth attitudes, especially those which imitate dancing; and Keyser mentions one in the great duke's gallery, at Florence, which had been taught to dance to a certain tune.

The SIBERIAN CRANE, is four and a half feet when standing erect. The bill is red, the plumage white, except the ten first greater quills, with the coverts, which are black; the legs long and red. These birds inhabit the vast marshes and lakes in Siberia; and make their nest among the reeds. They are shy, and always upon their guard against an enemy, having a sentinel to warn them of an approach; on the least alarm they utter a cry, not unlike the swan, and fly off directly.

The WHOOPING CRANE, is a native of America. The crown of the head and the temples are naked and papillous; the forehead, nape of the neck, and prime wing feathers, black; but the body is white. The under part of the

head, as far as the lower chap, is red ; the beak is yellowish, and jagged at the point ; the feet are red, and the prime tail feathers white. This species is often seen at the mouths of the Savanna, Aratamaha, and other rivers near St. Augustine ; in spring going north to breed, like the common crane, and returning south in autumn. These birds have a loud long note, which may be heard at a great distance. The natives of Hudson's Bay call this species *Wapaw-uchechauk*.

Cranes are migratory ; returning northward in the spring (where they generally make choice of the places which they occupied during the preceding season), and in the winter inhabiting the warmer regions of Egypt and India. Their migratory voyages are chiefly performed in the night ; but their loud screams betray their course. During these nocturnal expeditions the leader frequently calls, in order to rally his forces, and to point out the track ; and the cry is repeated by the flock, each answering, to give notice that it follows and keeps its rank.

According to Kolben, cranes are often observed in large flocks on the marshes about the Cape of Good Hope. He says, that he never saw a flock of them on the ground, which had not some birds placed, apparently as sentinels, on watch, while the others were feeding. These sentinels stand on one leg ; and, at intervals, stretch out their necks, as if to observe that all is safe. When notice of danger is given, the whole flock rise on wing and fly away. Kolben goes so far as to assert, that in the night-time each of the watching cranes, " holds in its right claw a stone of considerable weight ; in order that, if overcome by sleep, the falling of the stone may awake it !"

Cranes are seen in France in the spring and autumn ; but they are, for the most part, merely passengers. We are told that they formerly visited the marshes of Lincolnshire and Cambridgeshire in vast flocks : but none have of late been met with there.

#### THE NUMIDIAN CRANE.

The *demoiselle* of Numidia has been celebrated, by all ornithologists, as a most elegant bird. It has all the proportions and shape of the crane, only on a smaller scale ; its port, its garb, are the same ; and the same distribution of colours on the plumage, only the grey is purer,



and more pearled. This beautiful bird received the name of *demoiselle*, or *miss*, on account of its elegant form, its rich plumage, and its affected airs: it makes repeated gesticulations; it walks with sprightly ostentation, and it often leaps and springs from gaiety, as if it were preparing to dance.

This bent, which, in a certain degree, has been remarked in the crane, is so striking in the Numidian bird, that for more than two thousand years, during which it has been known, authors have constantly named it from its mimic gestures. Aristotle calls it the actor or comedian; Pliny, the dancer or vaulter; and Plutarch mentions its frolics and its address. It appears even to imitate the actions which it beholds.

Though this bird was thus famous among the ancients, it was little known and seldom seen in Greece or Italy; and, confined to its own climate, it enjoyed a sort of fabulous celebrity. Pliny, after terming it in one place the *pantomime*, joins it in another passage with the syrens, the griffins, and the pegasuses. It was late before the moderns were acquainted with it; they confounded it with the *scops* and *otus* of the Greeks, and *asio* of the Latins, on account of the odd gestures of that owl, whose ears were supposed to be represented by the long delicate filaments that hang from each side of the head of the Numidian bird.

This species is found in many parts of Africa and Asia. In the first, it has been met with on the coast of Guinea; but mostly about Bildulgerid (the ancient Numidia), and Tripoli; from thence along the coasts of the Mediterranean Sea and in Egypt. They are also found at Aleppo, and in the southern plain, about the Black and Caspian Seas; and are frequent beyond Lake Baikal, about the rivers Selenga and Argun, but never venture to the northward. In all places it prefers marshes and the neighbourhood of rivers, as the food is fish, like most of the heron genus.

It is frequently kept in menageries, being endowed with great gentleness of manners, added to its being a beautiful bird. Keysler mentions one in the great duke's gallery, at Florence, which had been taught to dance a certain tune, when played or sung to it. The name this bird is known by, in the east, is *kurki*, or *querky*. It will sometimes breed in confinement: one is recorded to have lived twenty-four years at Versailles, which had been raised there.



THE NUMIDIAN, OR BALEARIC CRANE.





## THE STORK.

*Yea, the stork in the heaven knoweth her appointed times ; and the turtle, and the crane, and the swallow, observe the time of their coming.*

JEREMIAH.

Who bid the stork, Columbus-like, explore  
Heavens not his own, and worlds unknown before ?  
Who calls the council, states the certain day ?  
Who forms the phalanx, and who points the way ?

POPE.

The white stork is a semi-domestic bird, haunting towns and cities ; and, in many places, stalking about the streets, in search of offal and other food. They remove noxious filth, serpents, and reptiles. On this account they are protected in Holland, and are held in high veneration by the Mahomedans ; and so greatly respected were they in times of old by the Thessalians, that to kill one of these birds was a crime expiable only by death.

Bellonius informs us, “ that storks visit Egypt in such abundance, that the fields and meadows are white with them. Yet the Egyptians are not displeased with this sight ; as frogs are there generated in such numbers, that, did not the storks devour them, they would over-run every thing. They also catch and eat serpents. Between Belba and Gaza, the fields of Palestine are often rendered desert on account of the abundance of mice and rats ; and, were these not destroyed, the inhabitants could have no harvest.”

The ancients ascribed many of the moral virtues to the stork ; as temperance, conjugal fidelity, and filial and paternal piety. The manners of this bird are such as were likely to attract peculiar attention. It bestows much time and care on the education of its offspring, and does not leave them till they have strength sufficient for their own support and defence. When they begin to flutter out of the nest, the mother bears them on her wings ; she protects them from danger, and will sometimes perish rather than forsake them. A celebrated story is current in Holland, that, when the city of Delft was on fire, a female stork in vain attempted several times to carry off her young ones ; and, finding she was unable to effect their escape, suffered herself to be burned with them.

A wild stork was brought by a farmer, who resided near Hamburgh, into his poultry-yard, to be the companion of a tame one that he had long kept there ; but



the tame stork, disliking a rival, fell upon the poor stranger, and beat him so unmercifully that he was compelled to take wing, and with some difficulty escaped. About four months afterwards, however, he returned to the poultry-yard, recovered of his wounds, and attended by three other storks, who no sooner alighted than they all together fell upon the tame stork and killed him.

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## LECTURE LXIII.

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### MAN.

There wanted yet the Master-piece, the end  
Of all yet done ; a creature, who—endued  
With sanctity of Reason, might erect  
His stature, and upright with front serene,  
Govern the rest, self-knowing, and from thence  
Magnanimous to correspond with heaven !

MILTON.

MAN is the chief and uppermost link in the chain of Animals ; whence all the other links descend by almost imperceptible gradations. This is evinced by his exterior sufficiently to satisfy the most sceptical imagination.

Linnæus thus describes Man :

“ The body, in general about five feet eight inches in height, is erect, and almost naked, having only some scattered distant hairs, except in some small spots to be afterwards noticed ; though at birth entirely naked. The head is egg-shaped, the scalp long, and covered with hair ; the fore-head broad ; the top of the head rather flattish, and the hind-head protuberant. The face is naked, with the brow a little flattened and quadrangular ; the temples compressed, with peaked angles pointing upwards and backwards towards the hairy scalp. The eye-brows prominent, and covered with hairs which, shedding outwards, cover each other like caves ; and between the inner extremities of the two eye-brows is a smooth, shallow depression, in a line with the nose. The upper eye-lid very moveable, the lower rarely moves ; both edged with a row of stiff recurved hairs, named *eye-lashes*. The eye-balls are round, without the suspending muscle of most quadrupeds ; or *membrana*

*nictitans*, the pupil, or opening of the sight, is circular. The upper parts of the cheeks prominent, softish, and coloured with a red blush; their outer parts flattened; the lower parts hollowed, lax, and expansile. The nose prominent, and compressed at the sides; its extremity higher than the rest, and blunt; the nostrils oval, open downwards, with thickened edges, hairy inside. The upper lip almost perpendicular, and furrowed on the middle, from the division between the nostrils to the edge of the lip; the under lip erect, thicker and more prominent than that above; both have a smooth red protuberance at their edges, surrounding the mouth. The chin is prominent, blunt, and gibbous. In males, all round the mouth hair, called the *beard*, first appears, about puberty, in patches on the chin. The teeth in both jaws are, the *fore teeth*, erect, parallel, and wedge-like, named *incisors*, or *cutting teeth*, close to each other, and more equal and round than in other animals; the *tusks*, called in man *eye-teeth* and *corner-teeth*, one on each side of the fore-teeth in each jaw, a little longer than the fore-teeth, but much less so than in other animals, and placed close to the other teeth; the *grinders*, five on each side in both jaws are blunt, and divided on their upper surfaces into prominent eminences; less remarkable than in other animals. The ears, placed on the sides of the head, are of an oblong rounded figure, with a semilunar bend on their anterior edges; they lie to the head, naked, arched at the margin on their upper and posterior edges, and are thick and soft at the under extremities.

“The trunk of the body consists of the neck, breast, back, and belly. The neck is roundish, and shorter than the head; its vertebræ, or chine bones, are not (as in most animals) connected by a suspensory ligament; the nape hollow; the throat, immediately below the chin, hollow at its upper part, and protuberant in the middle a little lower. The breast flattened both before and behind, has, on the fore-part, a cavity where it joins the neck; the arm-pits hollow and hairy; the pit of the stomach flat; on the breast are two distant, round, protuberant mammæ, or dugs, each having a cylindrical obtuse wrinkly projecting nipple, surrounded by a darker coloured circle called the *areola*. The back is flat, having protuberances on each side at the shoulder-blades, with a furrow or depression between them. The abdomen, or belly, is large and protuberant, with a hollow at the navel; the epigastric region, or situation of the stomach, is flat; the hypogastric regions, or sides of the belly, are protuberant; the groin flattish and hollowed. The pubes is hairy; the pelvis, or basin, is wider above, and grows narrower below. The male parts are external and loose; the penis cylindrical; the scrotum roundish, lax, and wrinkled, divided in the middle by a longitudinal ridge, which extends along the whole perinæum. The female parts are com-



pressed and protuberant, having *lybia*, *nymphæ*, *clytoris*, and *hymen*; and, in adults, secreting the *catamenia*. There is no external tail.

“ The limbs consist of arms and hands instead of fore-legs; and of thighs, legs, and feet. The arms are distant from each other; round, and about a foot in length from the joint of the shoulder to the elbow; the fore-arm, or cubit, obtusely prominent, contains two bones, the *ulna*, the principal thickness of the member, round, and flattened on the inside. The hands are broad, flat, and rounded; convex on the outside, or back of the hand, and concave on the inside, or palm. Each hand has five fingers, one named the *thumb*, shorter and thicker than the rest, and placed at some distance; the others near each other, and placed parallel, the outer or *little finger* being the smallest; the second, named *index* or *fore-finger*, and the fourth, called the *ring-finger*, are next in length and size; and the third, or *middle-finger*, is the longest; the point of this last, when the arm and hand hang down, reaches to the middle of the thigh. The nails are rounded and oval, flatly arched, or convex upwards, and each has a semilunar whitish mark at the root or lower extremity.

“ The lower limbs are placed close together, having brawny muscular haunches and swelling fleshy hips; the knees are obtuse, bend forwards, and have hollow hams behind. The legs, nearly of the same length as the thighs, are of a muscular make behind, where they swell out into what is called the *calf*; they are lean, and free of flesh on the shins, or fore-parts, and taper downwards to the ancles, which have hard hemispherical projections on each side, named the *ankle-bones*, or *malleoli*. The heel is thick, prominent, and gibbous, being longer and broader than in other animals, for giving a firm support to the body; it joins immediately with the sole of the foot. The feet are oblong, convex above, and flattened on the soles, which have a transverse hollow about the middle. Each foot has five toes, somewhat bent downwards, and gibbous or swelled underneath at their extremities; they are all placed close together, the inner or great-toe being thicker and somewhat shorter than the rest; the second and third are nearly of equal length; and the fourth and fifth are shorter than the others, the last mentioned or little toe being the shortest and the smallest. The toe-nails resemble those on the fingers, already described.

“ Thus man differs from the other animals in his erect posture and naked skin, having a hairy scalp, being furnished with hair on the eye-brows and eye-lashes, and having, when arrived at puberty, the pubes, breast, arm-pits, and chin of the males, covered with hair. His brain is larger than that of any other animal, even the most enormous; he is provided with an *uvula*, and has

organs of speech. His face is placed in the same parallel line with his body; he has a projecting compressed nose, and a prominent chin. His feet in walking rest on the heel. He has no tail; and the species is distinguished from other animals by some peculiarities of the female constitution."

What can exhibit (says Buffon) such a striking picture of our weakness, as the condition of an infant immediately after birth? Incapable of employing its organs, it needs every assistance. In our first moments of existence, we present a specimen of pain and misery, more weak and helpless than the young of any other animal. By birth passing from one element to another; when it leaves the gentle warmth of the tranquil fluid completely surrounding in the womb, it becomes exposed to the impressions of the air, and instantly feels that active element acting upon the olfactory nerves, and upon the organs of respiration, producing a shock, something like sneezing, by which the breast is expanded, and the air admitted into the lungs. The agitation of the diaphragm presses upon the viscera of the abdomen, and the excrements are thus first discharged from the intestines, and the urine from the bladder. The air dilates the vesicles of the lungs, and, after being rarified to a certain degree, is expelled by the spring of the dilated fibres reacting upon this rarefied fluid. The infant now respire; and articulates sounds, or cries. Buffon, speaking of man, says:

"In what manner are our first ideas attained? Have we not forgotten whatever passed during the cloud of infancy? How shall we trace our thoughts back to their origin? Even the attempt so to trace them, is it not presumptuous? Admitting it to be so, the importance of the subject is such, that the mind cannot be employed in a more noble research, and every effort may be exerted in so elevated a contemplation.

"Let us then suppose—a Man newly created, whose body and members are all perfect in formation, but who, awaking amidst the productions of Nature, is wholly a stranger to himself and all around him. Of a man so circumstanced, what would be the first emotions, sensations, and opinions? Was he to detail his first conceptions at such period, how would he express them? Might it not be in some manner like the following:—And here let us suppose such man speaking for himself:—

"Well do I remember that delightful anxious moment, when I first became conscious of my own existence; I knew not what I was, where I was, nor whence I came. On opening my eyes,



what an addition to my surprise! The light of day, the azure vault of heaven, the verdure of the earth, the transparency of the waters, all employed and exhilarated my spirits, and filled me with inexpressible delight. At first I conjectured that all objects were within me, and formed a part of myself; impressed with this supposition, I turned my eyes toward the sun, whose splendour instantly dazzled and overpowered me. Involuntarily I closed my eye-lids, though not devoid of a slight sensation of pain; and during this short interval of darkness, I imagined that I was about to sink into nothing.

“Astonished and exceedingly grieved at this great change, I was roused by many varied sounds. The whistling of the breeze, and the melody of birds, formed a concert, whose soft introgression pervaded the inmost recesses of my soul. I continued listening, and was persuaded that this music was certainly within me. So much was I engrossed with this new kind of existence, that I completely forgot the light part of my existence, till again I opened my eyes. What joy to find myself once more in possession of so many brilliant objects! The present pleasure surpassed the former, and for a time suspended the charming effect of sound. I turned my eyes upon a thousand different objects; I soon found that I could lose and retrieve them at pleasure; and with the repetition of this new power, I amused myself. I began to see without emotion, and to hear without confusion, when a light breeze communicated a new sensation of pleasures by wafting perfumes to my nostrils, and exciting in me a kind of additional self-love.

“Occupied by these different sensations, and impelled by the various pleasures of my new existence, I instantly arose, and was enraptured by perceiving that I moved along, as if by some unknown, or hidden power. Scarcely had I advanced one step, when the novelty of my situation rendered me immoveable. My surprise returned; for I imagined that all the objects around me were in motion, and the whole creation seemed once more to be in disorder. I raised my hand to my head, I touched my forehead, I felt my whole frame. Then I found my hand to be the principal organ of my body; all its informations were so distinct, perfect, and superior to what I had experienced from my other senses, that I employed myself awhile in repeating its enjoyments. Every part of my body touched by my hand, seemed to touch my hand in return, and actually gave back sensation for sensation. Ere long I perceived that this faculty of feeling was diffused over my whole frame, and I began to discover the limits of my existence; which at first I had supposed of immense extent, and diffused over all the objects I saw.

“Turning my eyes to survey my body, I imagined it to be of a size so enormous, that all other objects seemed, in comparison, as

so many luminous particles. I gazed upon my person with pleasure; I examined the formation of my hand, and all its motions; and it appeared larger or smaller, as it was nearer to or distant from my eyes. On bringing it very near, I found it concealed almost every other object from my sight. I began to suspect there was some fallacy in the sensation I experienced from the eye, because, perceiving my hand was only a small part, I could not conceive how it should appear so large; I therefore resolved to depend for information upon the touch which had never deceived me. This precaution was very advantageous. I renewed my motions, and proceeded, with my face towards the heavens; but striking lightly against a palm-tree, I was dismayed, and laid my hand, though not without fear, upon this object; and found it, a being distinct from myself, because it did not excite double sensation, as my own body had done. Now did I for the first time perceive that there existed objects external, and which did not form an actual part of my own existence.

“ From this new discovery I concluded that I ought to form my opinion in regard to external objects, similarly to that in regard to the parts of my body. I therefore determined to feel whatever I saw, and in vain attempted to touch the sun; I stretched forth my arm and found only an airy vacuum. As each object appeared equally nigh, every effort led me from one fit of surprise into another, nor until after innumerable trials, was I enabled, to use the eye as a guide to the hand, and perceived that some objects were more remote than others. Amazed and mortified at my uncertain state, and the numerous delusions to which I seemed subjected, the more I reflected, the more was I fatigued and oppressed with thought; I reclined beneath a tree loaded with delicious fruit, within my reach. On stretching forth my arm, and gently touching it, the fruit instantly separated from the branch; I seized it, and my ability to grasp in my hand an entire substance, which formed no part of myself, appeared very important. When I held it up, its weight, though in itself trivial, seemed like an animated impulse, in conquering which I found another and greater pleasure. I held the fruit near my eyes, and considered its form and colours. Its fragrance prompted me to carry it near my lips, and eagerly did I inhale that fragrance. The perfume invited my sense of tasting, which I found superior to that of smelling. What savour, what delectably new sensation did I now experience. There could not be any thing more exquisite. What before had been pleasure, was now heightened into luxury; the power of tasting gave me the idea of possession; I imagined that the substance of this fruit had become a part of my own, and that I was empowered to transform things without me at will.

“ Charmed with this new power, and incited by the sensations



I had already experienced, I continued to pluck the fruit and to eat. At length, however, an agreeable languor stealing upon my senses, my limbs became heavy, and my soul seemed to lose its activity. My sensations, no longer vivid and distinct, presented to me only feeble and irregular images. In the instant, as it were, my eyes became useless, closed, and my head, no longer borne up by the strength of the muscles, sunk back, and found a support upon the verdant turf beneath me. To every thing round me I was now lost and insensible; nor of my own existence did I retain the smallest sensation. How long I continued thus asleep, I know not, for as yet I had not formed the smallest idea of time. My awaking appeared like a second birth, and I only felt that my existence had experienced a certain interruption. This short annihilation produced in me a sensation of fear, and I began to conclude that I was not to exist for ever.

“ In this state of doubt and perplexity I also began to suspect that sleep had robbed me of some of my late powers, when, turning round, to resolve my doubts, how great my astonishment to behold another form exactly similar to my own! I took it for another self, and I imagined, that, far from having lost any thing during my last state of annihilation, my existence was in reality doubled. Over this new Creature I carried my hand, and, with rapturous surprise, found it not a part of myself, but something else, more charming, more glorious! nor could I help supposing that my existence was about to be transformed entirely into this second part of my being. New ideas arose in my mind, new passions possessed my soul, and exerted my curiosity. By the touch with my hand I found that she was animated; vivacity and intelligence beamed from her eyes, and delighted my soul, while love served to complete that happiness which was begun in the individual, and every varied sense was favoured with full gratification.”

#### OF THE FORM, STATURE, AND WEIGHT OF THE BODY.

##### *External Form.*

There are very few anatomists who enjoy opportunities of ascertaining the gradual changes which take place in the external form of the human foetus, during the earlier periods of its developement in the womb. The admirable series of engravings, therefore, in which Soemmering has represented these changes, from the first to the fifth month after impregnation, will be consulted with great interest.

According to these—an embryo of three or four weeks appears to the naked eye like a mustard-seed just beginning to grow; the head being like the body of the seed, and the trunk and remaining parts like the radicle. With the microscope, however, are seen a

little dark circle in the regions of the eyes ; a small slit, corresponding to the orifice of the mouth. Four little prominences are on the trunk, in the situation of the four extremities ; and between the two lower, is a curious prolongation, like a tail (called the *coccygeal protuberance*). In one of seven weeks, the proportional size of the head is so much less, that the peculiar form of the human body is quite apparent. Two small pores are perceptible in the region of the nose ; and the superior extremities seem divided into arm and fore-arm. In one of eight weeks, is seen a small pore in the region of each auricle ; a shoulder, arm, fore-arm, and hand, with five small tubercles, (the fingers), and in the lower extremities, parts corresponding to the thigh, leg, and foot ; but not toes. In one of nine weeks, there is a projection in the region of the nose ; part of the auricles formed ; the toes appear ; the pudenda are distinguished ; and the coccygeal protuberance disappears.

After this, considerable changes occur in the external appearance of the fœtus, as the different parts develope. Hair generally appears on the eye-brows, hind-head, and temples, early in the sixth month. The younger the fœtus, the larger its head, compared to the other parts ; the smaller its face, to the other parts of the head ; and the smaller its limbs, to the trunk. To the third month the upper extremities are larger than the lower ; about the fourth, they are equal ; and the fifth, the lower become larger.

The head of the male differs from that of the female, in being larger in proportion to the whole body, less rounded, flatter in the crown, and more prominent behind. In the male, the breast is more prominent than the umbilical region, but the contrary in the female ; a distinction perceptible in the youngest fœtuses. The trunk, between the upper parts of the loins, is arched in the male, but hollow in the female ; very early observable. The upper extremities are longer, in proportion to the trunk, in the male than in the female ; the arms less cylindrical ; the fore-arms fuller ; the wrists broader ; and the ends of the fingers less pointed. The circumference of the body, at the haunches, is less in the male than in the female ; the thighs more slender ; the feet longer ; the malleoli and heels more prominent ; and the great toe exceeds the others.

The length of an embryo of four weeks is about one-eighth of an inch ; of eight weeks, about an inch ; and at the end of the fifth month, about six or seven inches ; in the sixth month, about nine inches ; in the seventh, about twelve inches ; in the eighth, about fifteen inches ; and at the period of birth, on an average, about  $20\frac{1}{2}$  inches. The longest diameter of the head, at this period, is that from the crown to the chin ; and in general is about five inches ; the breadth of the head, from one parietal protuberance to the other, about three and one-half inches. Dr. Clarke states, that he measured the heads of sixty male and sixty female children,



born at the full time; and found the circumference, passing through the occipital protuberance, and the middle of the brow, on an average, 13.8 inches; while the arch from ear to ear over the crown, was 7.32 inches. One measured fifteen inches in circumference, and one eight and a half inches from ear to ear; but none were under twelve inches in the one direction, or six one-quarter inches in the other.

Most animals remain blind some days after birth. Infants open their eyes to the light, the moment they are born, commonly blue, dull and fixed, yet they cannot distinguish objects, because they are incapable of directing their eyes to them. The organ of vision is yet imperfect; the cornea is wrinkled, and perhaps the retina too soft to receive the images of external objects, and communicate the sensation of distinct vision. After the forty days, the infant begins to hear and smile; also to look at bright objects, and frequently turns its eyes towards the window, a candle, or any light. Now likewise it begins to weep; for its former cries and groans were not accompanied with tears. Smiles and tears are the effect of two internal sensations, both dependent on mental action. They are peculiar to the human race, and express mental pleasure or pain; while the cries, motions, and other marks of bodily pain and pleasure, are common to man and most other animals. Pain and pleasure are the universal power which sets all our passions in motion.

The skin of a new-born child is reddish, because so fine and transparent as to allow a slight tint of the colour of the blood to shine through. The form of the body and members is not perfect in a child soon after birth; all the parts appear swollen. At the end of three days, a kind of jaundice generally comes on, and milk may be squeezed by the fingers out of the breasts of the infant. The swelling decreases as the child grows. The liquor in the amnios leaves a viscid whitish matter upon the infant's body. In Britain we have the precaution to wash the new-born infant with only warm water; but whole nations inhabiting the coldest climates, plunge their infants as soon as born into cold water without their receiving the least injury.

The child is not allowed to suck as soon as it is born; but time is given for discharging the liquor and slime from the stomach, and the *meconium* or excrement, of a

black colour, from the intestines. As these substances might sour the milk, a little diluted wine, mixed with sugar, is first given to the infant, and the breast presented after ten or twelve hours have elapsed. The young of quadrupeds of themselves find the way to the teat: it is not so with man; the mother, to suckle her child, must raise it to her bosom; and the infant can express its wants only by feeble cries:

The new-born infant needs frequent nourishment; and ought to have during the day the breast every two hours, and during the night as often as it awakes. It first sleeps almost continually; and never wakes but when pressed by hunger or pain.

The teeth usually begin to appear about the age of seven months. The cutting of these, although a natural operation, does not follow the common laws of nature, which act continually on the human body without occasioning the smallest pain, or even producing any sensation. Here a violent and painful effort is made, accompanied with cries and tears. Children at first lose their sprightliness and gaiety; become sad, restless, and fretful; the gums are red, and swelled; but afterwards become white, when the pressure of the teeth is so great as to stop the circulation of the blood.

Though the body is very delicate in infancy, it is less sensible of cold than at any other time of life. The internal heat is greater, and the pulse much quicker than in adults. Hence probably small animals have more heat than large ones; for the beating of the heart, and of the arteries, is always quicker in proportion to the size of the animal. The strokes of the heart in a sparrow are so rapid, that they can scarcely be counted.

Till three years of age, the life of a child is very precarious. In the next two or three years, it becomes more certain; and at six or seven years, the child has a better chance of living than at any other period of life. From the bills of mortality published at London, it appears, that of a certain number of children born at the same time, one third of them die the three first years; according to which, one third of the human race are cut off, before they are three years of age. But the mortality among children is not nearly so great every where as in



London. M. Dupré de St. Maur, from many observations made in France, has shown that half of the children born at the same time are not extinct till seven or eight years have elapsed.—(*See the Engraving.*)

Thus, puberty accompanies adolescence, and precedes youth. This is the spring of life; the season of pleasures, loves, and graces; but, alas! this smiling season is of short duration. Hitherto nature seems to have had in view only the preservation and increase of her work; not having made provision for the infant further than what is necessary to its life and growth. It has lived a kind of vegetable existence, shut up within itself, and which it was incapable of communicating. In this first stage of life, the powers of reason are asleep: but the principles of life soon multiply.

In the temperate climates of Europe, the medium stature of men is five feet eight inches. In Switzerland the inhabitants of the plains are taller than those of the mountains. In surveying the inhabited earth, we find greater differences in the statures of individuals than in those of nations.

The mean height of the male, at maturity, is about five feet eight inches, and the following are the comparative average proportions of particular parts:

	<i>Inch.</i>
Total height of the body . . . . .	68.00
From the tip of one middle-finger to that of the other, the upper extremities extended laterally to a right angle with the trunk . . . . .	68.00
From the crown of the head to the top of the pubes . . .	34.00
From the same to the lower margin of the chin . . . . .	9.75
From the latter to the top of the breast . . . . .	3.85
From the last to the pit of the stomach . . . . .	6.08
From the pit of the stomach to the navel . . . . .	6.08
From the navel to the top of the pubes . . . . .	6.08
From the top of the prominence of the shoulder to the fold of the elbow . . . . .	12.06
From the fold of the elbow to the top of the hand . . . .	10.02
The hand, measured in the palm, from the lower fold of the wrist to the point of the middle-finger . . . . .	7.75
From the top of the inside of the thigh to the inside of the joint of the knee . . . . .	14.06
From the inside of the joint of the knee to the sole of the foot	18.05
The foot, measured on the sole, from the posterior margin of the heel to the point of the great toe . . . . .	9.75

The average height of the female is about five feet four inches ; and the length of the different regions proportionally less than in the male.

The body having acquired its full height during adolescence, and its full dimensions in youth, remains some years before it begins to decay. This is the period of manhood, from 30 or 35 to 40 or 45 years. The powers of the body continue in full vigour, and the principal change in the human figure arises from the formation of fat in different parts.

Notwithstanding the general similitude of countenance in nations and families, there is a wonderful diversity of features. One man has liveliness and gaiety evinced in his countenance, and announces, by his cheerful appearance, the character he supports in society. The tears which bedew the cheeks of another, would excite compassion in the most unfeeling heart. Thus the face of man is the rendezvous of the symptoms, of both his moral and physical affections ; tranquillity, anger, threatening, joy, smiles, laughter, malice, love, envy, jealousy, pride, contempt, disdain or indignation, irony, arrogance, tears, terror, astonishment, horror, fear, shame or humiliation, sorrow and affliction, compassion, meditation, particular convulsions, sleep, death, &c. &c. can all be successively evinced in the same countenance.

*Organs of the Brain, according to the System of Drs. Gall  
and Spurzheim.*

1. The organ of sexual instinct. Fig. II. III.
2. The organ of parental and filial love. Fig. II. III.
3. The organ of susceptibility for instruction, *memoria realis*. Fig. I. II.
4. The organ of finding and remembering places. Fig. I. II.
5. The organ of recollecting persons (in the eye-hole). Fig. I. II.
6. The organ of comparing colours. Fig. I. II.
7. The organ of music. Fig. I. II.
8. The organ of arithmetic. Fig. I. II.
9. The organ of finding and remembering words (in the eye-hole). Fig. I.
10. The organ of philosophy (in the eye-hole). Fig. I.
11. The organ of mechanical arts. Fig. I. II.
12. The organ of friendship and attachment. Fig. II. III.
13. The organ of fighting. Fig. II. III.
14. The organ of murder. Fig. II. III.
15. The organ of cunning. Fig. II. III.



16. The organ of thieving. Fig. I. II.
17. The organ of loftiness and high-mindedness. Fig. III.
18. The organ of thirst for glory, and of vanity. Fig. III.
19. The organ of reflection. Fig. II. III.
20. The organ of ingenuity. Fig. I. II.
21. The organ of philosophical judgment (includes No. 20.) Fig. I. II.
22. The organs of wit. Fig. I. II.
23. The organ of induction (includes the organs Nos. 20, 21, and 22.)  
Fig. I. II.
24. The organ of meekness or good-nature. Fig. I. II.
25. The organ of religious fanaticism. Fig. I. II. III.
26. The organ of constancy. Fig. II. III.
27. The organ of imitative power (includes No. 24.) Fig. I. II.

Man being sovereignly endowed with intelligence, and being destined to unite in himself all the virtues, presents the impression of them on his exterior form; to manifest them by features which should distinguish him from all other animals. Accordingly, the form of his face is the more beautiful, the more it is peculiarly his own, and less resembles any other; it is the more disgusting, the more sensibly it recalls that of any beast.\* Among the vast variety presented by the countenance of animals, the human is distinguished by its regularity. In front, it forms an exact oval, the parts of which are regularly divided, and preserve a symmetrical relation to each other. It is in this front part that animals principally differ from each other, and from man; for the hinder part of the skull or occiput is nearly the same in all. If a line were passed through the roots of the teeth of the upper jaw, and the most projecting part of the frontal bones, which should cross another line, passing horizontally over the whole cheek, to reach from the root of the nose to the lower extremity of the ear, or sometimes even to its orifice, these two lines would form, by their union, an angle of from eighty to ninety degrees, and even more.

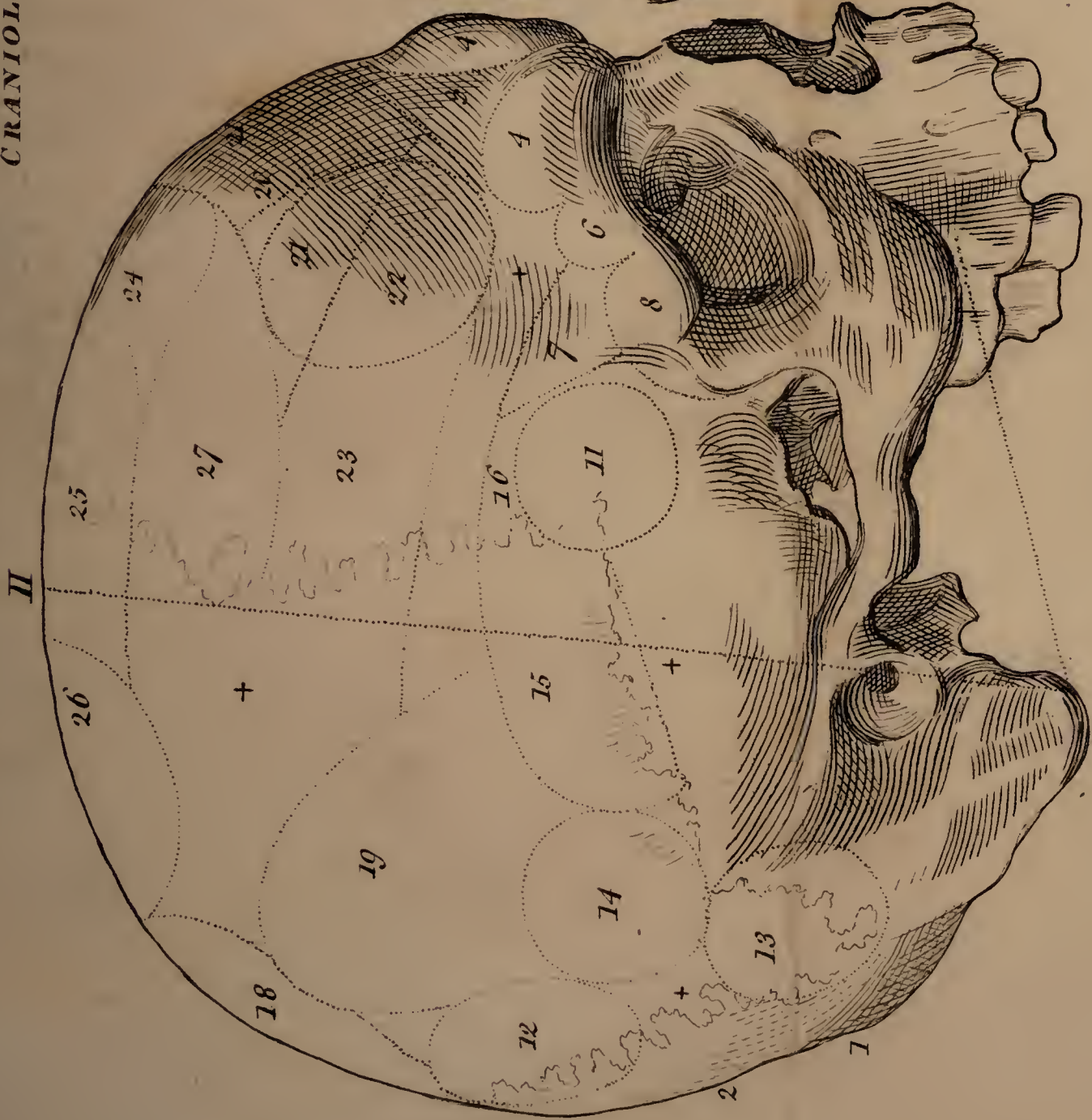
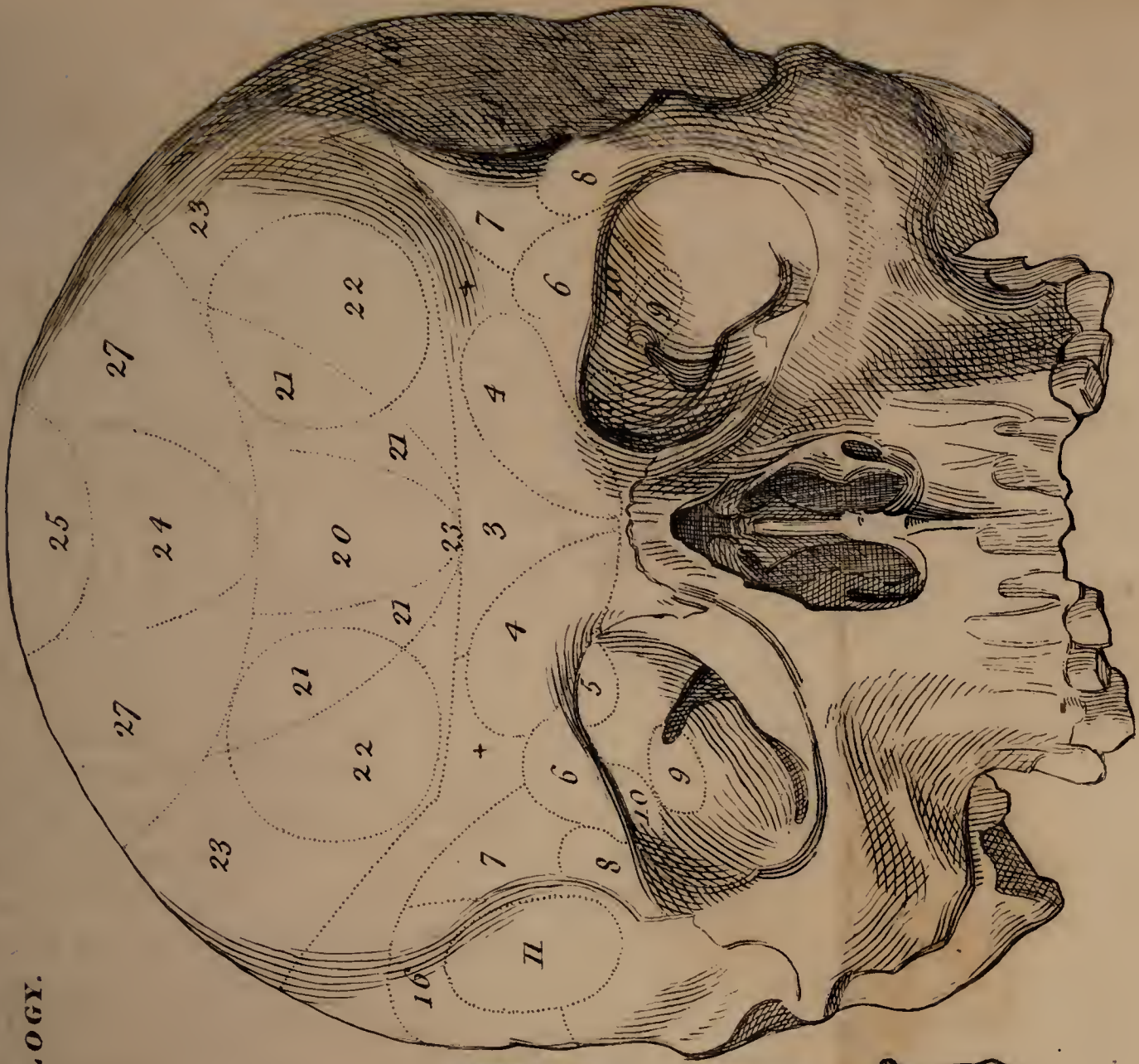
All other animals, beginning with the ape, depart more or less from this angle; and their instinct appears narrower, in proportion as the union of these lines forms a sharper angle; so that the observer may ascertain, at sight, the degree of intellect of an animal, by the dispo-

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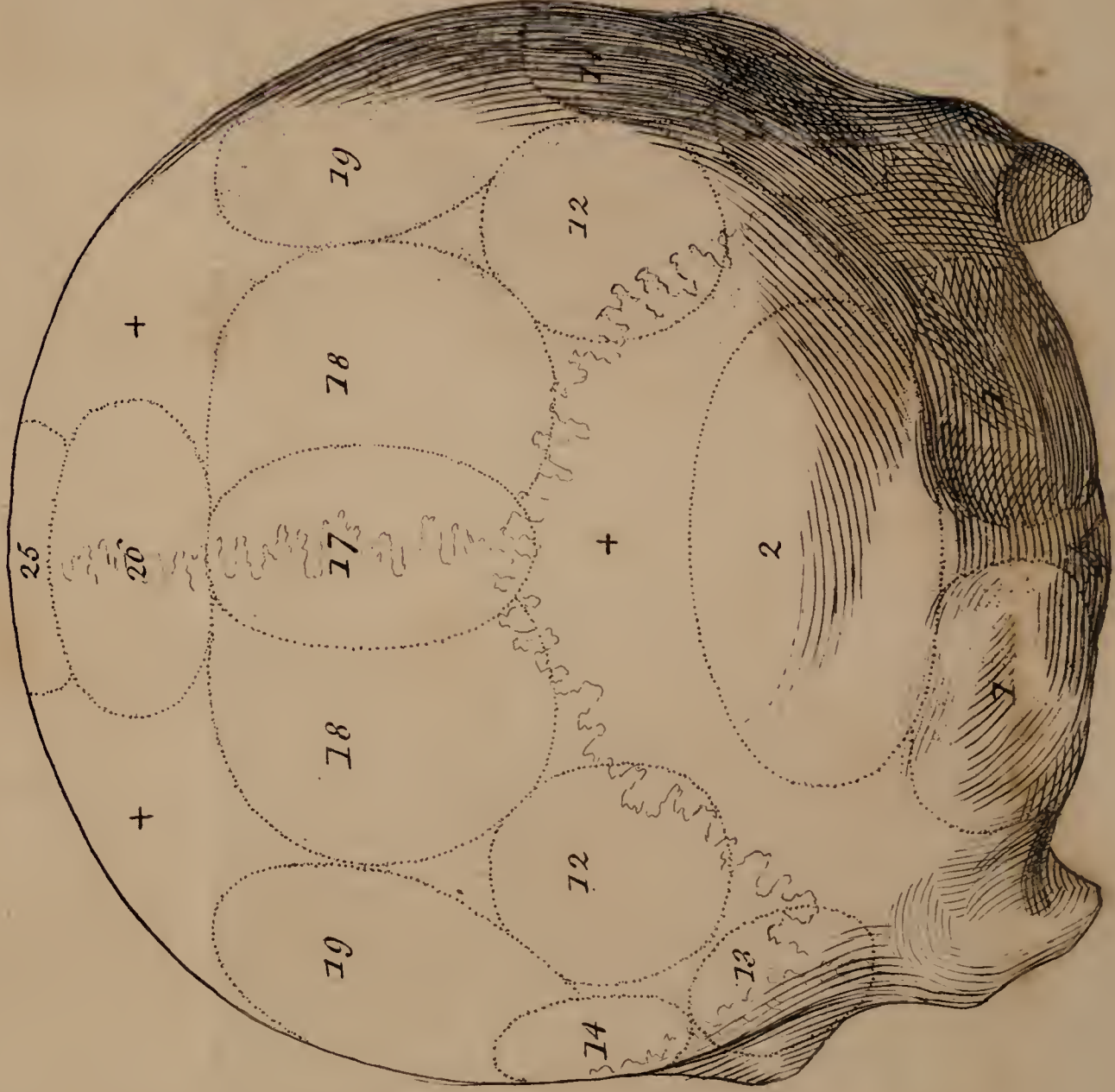
\* See the plate. The 2nd and 7th figures represent the human face in its beauty; the 11th to the 14th inclusive represent it debased, and approaching that of some other animal.



I



III.







sition of the bones of its head, nature appearing to have established this visible correspondence between its exterior form, and the extent of its faculties. Thus, the fishes, which are the dullest of all animals, are also those whose face offers a sharper angle by the union of these two lines. The human head presents in its front part, as we have just observed, the exact shape of an egg; that is to say, of an oval, wider above than below. In dividing this oval into two diameters, the largest, marked A and B, will part into two equal portions, the forehead, the nose, the mouth, and the chin. See Fig. 20.

The smallest will divide the head into two equal portions, at the origin and extremity of the eye-brows, or sometimes to the middle of the orbilary cavities. See the same Fig. Line C D. These two parts, divided again into halves, will give, one the origin of the hair, the other the extremity of the nose. The fourth part divided into three, will give the place of the mouth, and the origin of the chin.

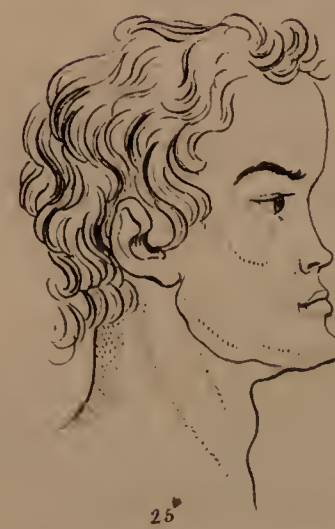
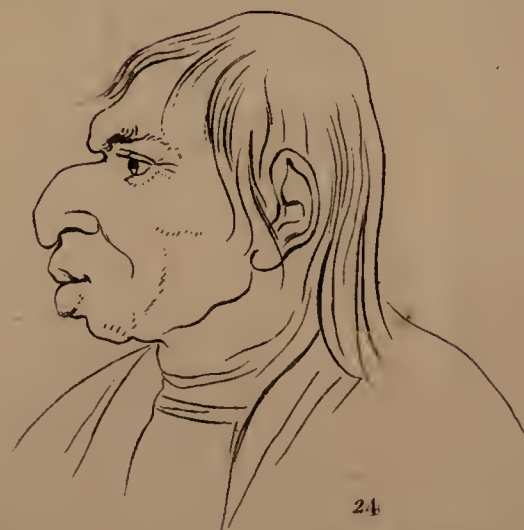
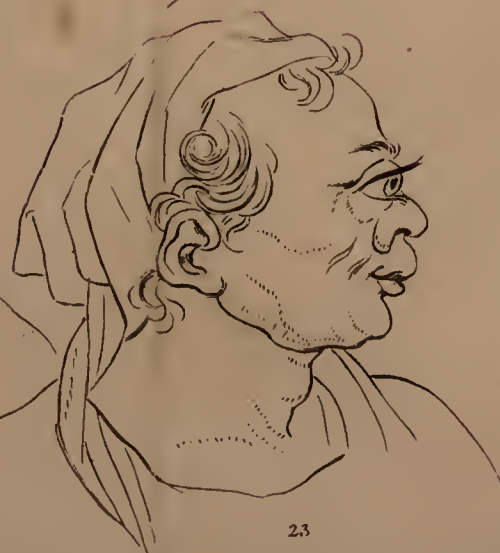
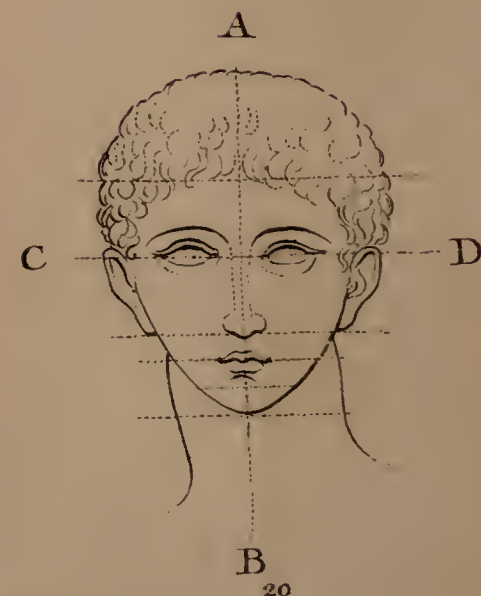
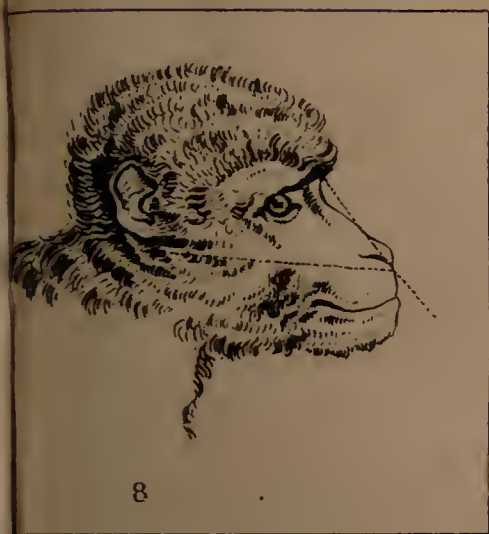
The base of the nose forms, with its most prominent part, an equilateral angle, which ought to be of the size of the mouth, or of the eye; there will be between the the two eyes, the space of an eye or a nose. The nose and the forehead will only be separated by a slight and almost imperceptible inflection. The upper part of the forehead, and the lower part of the chin, will be a little depressed, to soften the oval, and give it a more regular form. This may be perceived in the regular profile, Fig. 18. In Fig. 15, 16, 17, 25, and 26, the beauty is injured, because the face is constructed on a line too convex or concave, too flat, too long, or too wide. Figures 21, 22, 23, and 24, are caricatures taken from *Leonardo da Vinci*.

The forehead ought to be straight in its line of union with the nose; but it is slightly rounded in its upper and lateral parts. A narrow forehead deforms the oval, and gives a hardness to the face. When it is open and smooth, it announces the peace of the mind; but when it is furrowed by wrinkles, it denotes the turbulence of the passions; and is the stamp of sorrow and misfortune. The eyes should rather be large than small; they should neither be sunk too deep, which diminishes their lustre,



nor placed too forward, which injures the acuteness and softness of the look. Large eyes, in certain positions, deform the oval of the head, and appear the effect of an illness or a blow. Round eyes are less beautiful than long ones, and than those which resemble the form of an almond. Round eyes, by discovering too much white around the pupil, give to the expression an air of astonishment, and disturb the peace of the countenance. The eye-brow ought to be slender, large, well arched; and whatever be the colour of the eyes, it is handsomest when of a brown hue, since it then forms an agreeable contrast with the colour of the skin, and is, besides, perceived at a greater distance. The eyes more particularly express intelligence; but it is the mouth, above all, which expresses the sentiments of the heart, in such a manner, however, that their effects unite and fortify each other. It is in women that this organ shews itself with all its graces; it should indicate the sensibility of their soul, and the soft affections by which it is characterized. Man, endued with stronger intelligence, manifests it by the fire of his glances; but his mouth is deprived of the graces which adorn that of woman. Being destined by Nature to be veiled with a beard, its motions have not so many charms, nor its colours such beautiful contrasts. The mouth ought to be small, only a little larger than the breadth of the nostrils; smaller, its motions are less free, it is less eloquent, less adapted to the tribune and the theatre. The lower lip is larger and fuller than the upper; both are divided in the middle, by marks which distinguish the left side from the right; a distinction which is remarked not only in the forehead, the nose, and the chin, but upon the neck, between the clavicles, and in the whole frame of the body, by the *sternum*, the *linea alba*, and all the muscles which divide the body into two equal parts. Since it is round the mouth that the sweetest affections of the mind are manifested, the most beautiful mouths will be those on which this appearance is most readily to be traced; but thick and pouting lips, like those of Negroes, giving to the face a gross and discontented air, cannot be a beautiful feature, since this feature corresponds with a state of mind evidently bad. Besides, when these mouths express laughter, retaining always a









little of their former disposition, the laugh is neither produced so quickly nor so clearly ; it has neither sweetness nor precision, and becomes a grimace, a disagreeable convulsion.

In the pictures which they have drawn of beauty, the poets have succeeded better in describing the perfections of the eyes and mouth, than those of the nose and chin, doubtless because they did not know sufficiently how to account to themselves for the effect that they produce in the beauty or ugliness of the countenance. But, if these two parts serve little to expression, they are every thing to the perfection of the form, and the regularity of the features. The chin terminates and preserves the oval ; to it the profile owes part of its beauty ; it is, besides, a feature characteristic of the human species, since it is found in no other animal. As to the nose, although it be not formed to declare, like the eyes, the traits of intelligence, or, like the mouth, the affections of the heart, it is, perhaps, more important than them to the beauty of the countenance ; it is the most striking feature of the face ; on account of its prominent figure, it forms its most distinct character ; it is the fixed point around which the other parts of the face assemble and form themselves ; it is, in some degree, their regulator, and many celebrated artists determine according to it all the proportions of their figures. To serve for this purpose, its form should be straight and simple ; it ought to make a prominent and well defined angle with its base : if it is separated from the forehead by a deep cavity ; if it is broad, short, and distant from the mouth ; seek not elsewhere what makes the face appear vulgar and ignoble. By its fixedness in the effects of the passions, it shews how much the other features change, it causes the opening of the mouth to be perceived in cries of grief and terror, and in the different functions of this organ so full of motion ; it also marks the elevation and depression of the eye-brows ; in short, it concurs in defining all the movements produced by joy, grief, fear, admiration, rage, &c. It is well known, how much the loss of the nose disfigures a face, and this is another proof how much it serves to beauty. During sleep, the eyes close, and become unexpressive ; they, as well as the mouth, may be deformed by grief ; but these



different changes, which modify the face, do not destroy its beauty ; it loses its effect by the destruction of the nose.

The teeth, to be handsome, should be small, even, round, and, above all, white. The face receives a great charm from them ; they embellish the laugh, the speech, the sweetest sentiments of the heart. The teeth are the only bones of the body which are exposed ; they are, as it were, specimens of the other bones ; they ought, therefore, to indicate them healthy and well-formed.

The ear ought to be as long as the nose, or sometimes a little longer, but its lower extremity should rest upon the basal line ; that is to say, to terminate at the third part of the head ; its upper extremity being at the second, or a little higher. The whole ear is divided into three equal parts, of which the lobe occupies the lowest, and the cavity the middle. It should be constructed on a line somewhat inclining towards the mouth, and not parallel with the general form of the head.

In faces all equally beautiful, it is only by almost imperceptible shades that their beauty varies, and causes itself to be remarked : the eye-brow more or less arched, the nose more or less rounded or prominent, the eyes more or less open, the oval more or less elongated ; in short, the slightest modification suffices to express all the shades of beauty, and to distinguish faces which, to be beautiful, must be regular, and formed on the whole, and in the details, according to the principles which we have laid down. From the slight sketches traced in the large plate, it may be seen, that ugliness augments in proportion as the face departs from the regular form.

Though the human body is externally more delicate than that of any other animal, yet it is very nervous, and perhaps stronger in proportion to its size than that of the strongest animals. The porters at Constantinople carry burdens of 900 pounds weight. Many wonderful stories are related concerning the agility in running of the Hot-tentots, and other savages. Civilized man knows not the full extent of his powers, nor how much he loses by effeminacy and inactivity. He is even ignorant of the strength and vigour of which his members are capable by motion, and being accustomed to severe exercises ; as in runners, tumblers, and rope-dancers.

A cessation from exercise is not alone sufficient to restore the powers of the body when exhausted by fatigue. In sleep nature finds that repose suited to her wants, and the different organs enjoy salutary relaxation. In this wonderful state, man, unconscious of his existence, and sunk in apparent death, repairs the loss his faculties have sustained, and assumes a new existence. In this state of drowsiness and repose, the senses cease, the functions are suspended, and the body seems abandoned to its mechanism. It is now ascertained that there is a congestion of blood in the head during sleep; but that congestion alone is insufficient, a retarded circulation being also necessary. Dr. Park has established two important facts. Sleep results from two combined causes: 1st, A congestion of blood in the brain; 2dly, A retarded circulation;—and every thing inducing these conditions, promotes sleep, while circumstances of a different tendency prevent it. The horizontal posture of the body facilitates sleep, because, by it, the heart is relieved from the pressure of some pounds of blood, which, by the feeling of distension, excites the vessels to action. The limbs also being at rest, do not employ such an exertion of muscular power as assists to increase circulation. From the diminished feeling of distension, follows a relaxation of the vascular system, and moderate congestion of blood, with retarded circulation, and consequent sleep. If, however, the congestion be immoderate, it excites the vessels to inordinate action, and produces a contrary effect; hence it is difficult to repose without a pillow, or with the head so placed as to cause a rush of blood on the brain.

In the living human body, regarded as a peculiar organization, there are to be considered—the *materials* of its subsistence, afforded by the fluids; the *structure* of the solids, containing the fluids; and the *vital powers* or *unknown cause* of the phenomena of life; by which the solids receive the influence of the fluids, propel the fluids, and perform various motions.

The materials of the body, though primarily fluid, naturally tend to solidity; the solids, however dry in appearance, abound in liquids and aeriform fluids; and probably no fibril, during life, is destitute of vital power.

The solids gradually commence in the rudiments of the



gelatinous embryo ; and differ in cohesiveness from the soft and pulpy medullary matter of the brain, to the vitreous substance of the corona of the teeth. Earth, principally lime with phosphoric acid, enters into their composition.

The fluids, are the chyle, the blood, and the secretory expelled in various ways from the system.

The blood is a well known fluid as to colour and existence ; it is the chief and primary fluid, the vehicle of those successions of oxygenous and carbonaceous particles which cease only with life ; of a remarkable odour, and nauseous saltish taste. It consists of a watery fluid, endowed with a nidorous odour ; the *serum*, of a viscid nature, and remarkable for containing soda ; the *cruor*, of globular particles  $\frac{1}{3300}$  of an inch in diameter, varying in colour with the health of the animal ; and the *lymph*, the fibrous matter of the blood, and containing oxygen, carbon, and azote. This fluid flows in a circle, propelled from the heart into the arteries, it is distributed through the body, and returns through the veins to the heart.

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## LECTURE LXIV.

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### MAN.

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#### ANATOMY OF THE HUMAN BODY.

Health depends on that harmony and equilibrium of the matter and powers of the system, requisite for the due performance of its functions. The requisites are, properly prepared fluids, duly formed solids, vigorous vital powers, and a well-directed mind.

Anatomists divide the animal or human body into the solids, which are the containing parts, and the fluids or parts contained.—Bones, cartilages, ligaments, muscles, tendons, membranes, nerves, arteries, veins, glands, and the brain, are commonly denominated solids.—Chyle, blood, lymph, mucus, synovia, oleaginous matter, the

tears, urine, pancreatic and gastric juices, saliva, semen, are ranked under the title of fluids. Another division of anatomy is into *Osteology*, which treats of the bones and cartilages, and *Sarcology*, which comprehends the history of the viscera and internal parts, the doctrine of the muscles, and the description of the nerves, arteries, veins, and lymphatics.

BONES are hard, brittle, and insensible. Their use is for the support of the whole fabric of the body, the defence of the soft and more delicate parts, and to assist in loco-motion. The colour of the bones varies from white to pale red. They become whiter and more solid from age. Their strength is in proportion to the due intermixture of animal gluten and earthy matter; and the distance of their centre of gravity from the centre of motion. The several bones of any animal separated from the soft parts, dried, and artificially joined together in their natural order, form what is called *a skeleton*.

The usual division of the bones of the human body is into those of the head, trunk, and extremities. The bones of the head are again subdivided into those which form the cranium or skull, the bones of the face, the teeth, the bones of the ear, and the bone of the tongue. The bones of the skull are the frontal, two parietal, two occipital, two temporal, two ethmoidal, and the sphænoid bone, making ten in all. Where the edges of the bones of the cranium come in contact they are united with each other by what are termed sutures. The edges being serrated, have their indentations and projections reciprocally dove-tailed together.

The TEETH consist of the incisores 8, cuspidati 4, and molares 20; in all 32: but their number varies in different persons. Those parts of the teeth which are exposed above the gums are covered with a peculiar substance called enamel, of a brilliant whiteness, highly polished, remarkably hard, and entirely destitute of vascular organization. The bones of the ear are called *malleus*, *incus*, *stapes*, and *orbiculare*, from their supposed resemblance to a hammer, an anvil, a stirrup, and a ball; and these four, with the single bone of the tongue called *os hyoides*, complete the bones of the head.

The bones of the trunk comprehend those of the spine



or back-bone, with its appendages, 26, the *thorax* or chest 25, and of the pelvis or base of the body 2, making in all 53. The spine comprehends 7 cervical *vertebræ*, 12 dorsal *vertebræ*, and 5 lumbar or of the loins, with the termination called the *os sacrum* and its appendix the *os coxygis*. The bones of the *thorax* are the *sternum* or breast-bone, and 24 ribs, of which 14 are called true ribs, and 10 false, from the extremities of them not meeting together like their fellows. The number of the ribs sometimes varies : the usual number is 24, and there are seldom less, but some few persons have 26. The true ribs are connected to the *vertebræ* and the sternum, by their respective ends ; but the false ribs, though joined in the same manner with the *vertebræ*, are elongated at the opposite extremity with cartilages which just attach themselves to each other.

In the upper extremities, the shoulders have 4 bones, the arms 2, the fore-arms 4, and the hands 54 ; in all 64.—The shoulder is divided into the *scapula* or blade-bone, and the clavicle or collar-bone ; each arm has singly *humerus*, and the fore-arm the *ulna* and *radius*.

Each hand is divided into—1st, the *carpus* or wrist, containing the *os naviculare*, *lunare*, *cuneiforme*, *orbiculare*, *trapezium*, *trapezoides*, *magnum*, and *unciforme* ; 2d, the *metacarpus* or hand proper, comprising 10 bones ; and 3d, the phalanges or joints of the fingers, containing 28 bones. There are, besides, certain small bones sometimes attached to the joints of the thumb, and termed sesamoidal, which vary in number in different persons.

The bones of the lower extremities are in number 52 :—the thigh bone called *femur*, the *tibia* and *fibula* of the leg, the *patella* or *rotula*, in common language the kneepan. The bones of the foot comprehend, 1st, the *tarsus* or instep, called *astragalus*, *cuboides*, *naviculare*, the heel-bone or *os calcis*, the *os cuneiforme internum*, *medium*, and *externum* ; 2d, the *metatarsus*, or foot proper ; and 3d, the *phalanges* of the toes.

The whole number of bones in the human body, according to the preceding calculation, is about 248 : but they vary in different persons, and in the same person at different periods of life.

CARTILAGE, or gristle, is a hard, white elastic sub-



BONES IN FRONT.

London. Published by Sir R. Phillips & C<sup>o</sup> Feb. 10. 1823.

Neale & Son 358 Strand





stance, smooth and shining, which is attached to and covers the surfaces of the bones at their moveable articulations, the joints.

The connexions of the bones with each other are called articulations. These junctures are either moveable, immoveable, or mediate. The use of the joints is obviously to give motion, strength, and elegance to the body and limbs, to facilitate the performance of all the actions incident to vitality, and perfect the mechanism of the animal machine.

LIGAMENTS are strong elastic membranes, shining and polished, connecting the extremities of the moveable bones. They are divided into *capsular*, those which like a bag surround and enclose the joints, and *connecting* those which are inserted in the ends of the bones, and tie them together. The use of the connecting ligaments, both external and internal, is to strengthen the extremities of the bones when in motion : and that of the capsular ligaments to preserve the *synovia* by which the surfaces of the joints are lubricated to prevent the ill effects of friction.

MUSCLES are portions of flesh, or collections of fleshy fibres capable of contraction and relaxation. They are called *voluntary*, when subject to be moved by the will, as those of the limbs, the tongue, &c. ; and *necessary* or *involuntary* when they contract by an impulse independent of volition, as the heart, stomach, and many others : and there are also muscles which are partially influenced by the will, whose action is termed *mixed* ; such are the respiratory muscles. The muscles in an healthy state are of a bright red colour, shining, and replete with blood-vessels, nerves, and lymphatics, distributed into and amongst even their minutest fibres. Muscles which act in opposition to each other are called *antagonists*, so that every muscle designed for the extension of a part, has an *antagonist* for its flexion. The end of the muscle which adheres to the most fixed part is usually called its origin ; and that which is attached to the most moveable part, its insertion.

Each muscle is surrounded by a very thin covering of cellular membrane, which not only encloses it, but dips down into its substance, and connects and surrounds all



the fibres, which are lubricated by the fat contained in its cells. Muscles at their extremities commonly terminate in white, firm, shining fibres called tendons, which in many instances are inserted into the contiguous bones.

When a voluntary muscle is wounded or irritated, it contracts independent of the will: this is called *irritability*. This property extends also to all the involuntary muscles, and the degree of irritability depends upon the age, sex, temperament, mode of living, and climate, as well as the nature and force of the stimulus applied. The force of the contraction of muscles, when voluntarily moved, differs according to the particular purpose intended. An astonishing proof of muscular power is found in this circumstance,—that the muscles of the lower jaw, which altogether in the human subject do not exceed a single pound in weight, are yet capable of exerting a force equal to 534 pounds, and in wolves, lions, &c. a still greater.

MEMBRANES are thin expansions of cellular substance, fibrous and elastic, spread over the bones and other parts, and also lining the cavities of the body, and in some instances dividing them into distinct parts. Membranes, like all other organs of the body, have their blood-vessels, nerves, and lymphatics; of which indeed they are, properly speaking, a congeries. They vary considerably in their degree of density, strength, and elasticity, and acquire different appellations from the parts to which they belong. The membranous covering of the bones in general, which every where clings to their surfaces, is denominated from its office *periosteum*; that which particularly envelopes the skull *pericranium*.

The membranes of the brain are the *dura mater*, the *pia mater*, and *tunica arachnoides* (the latter of which is of a texture so delicate, that it is liable to be destroyed by the slightest touch). The *dura mater* lines the bones of the *cranium*, and closely adheres to their innumerable blood-vessels which penetrate into the substance of the bones: The *pia mater* and tunic closely enveloping the brain, descend into the furrows of its irregular surface, and all its processes and protuberances form an external covering to the nerves at their origin, and accompany them throughout their whole course. The membrane which lines the cavity of the *abdomen*, and forms a common coat to the intestines and other viscera, is called *peritoneum*; and, in like manner, membranes belonging to particular organs acquire particular names therefrom, as the papillary membrane and *conjunctiva* of the eye, the choroid membrane of the ear, the *membrana tympani*, the *pericardium* or membra



BONES OF THE BACK.

*Neale & Son, 120, Strand*

*London. Published by Sir R. Phillips & Co. Feb. 10. 1823.*





nous bag which encloses the heart, the membrane which lines the mouth, &c.

The use of the membranes, besides that of giving compactness to the different vessels and organs which they envelope, is to form a medium for the introduction of blood-vessels, veins, nerves, and lymphatics to the several viscera, and other parts which are covered by them. The most extensive membrane of all is that which forms the general surface of the whole body under the denomination of skin.—*See the plates and descriptions.*

There are three principal CAVITIES of the body; that of the *cranium* or skull, of the *thorax* or chest, and the *abdomen* or belly. The cavity of the *cranium* is filled by the brain, a large viscus of a greyish colour, moderate consistence, and irregularly oval figures. The brain is divided into three portions, called the *cerebrum*, *cerebellum*, and *medulla oblongata*. There is also a fourth portion, which being continued from the latter, fills a bony canal formed by the *vertebræ*, and is called *medulla spinalis*, or spinal marrow.

The *cerebrum* is enveloped in two membranes, one strong and thick, which lines the inner surface of the skull; the other finer, and closely spread over the whole superficies of the brain. The surface of the *cerebrum* is very unequal, having furrows or fissures into which duplicatures of the *pia mater* descend, and separate the circumvolutions from each other. The *cerebrum* is divided laterally into two portions called hemispheres, each having three lobes. The substance of the *cerebrum* is of two kinds, medullary and cortical; the former whiter and harder, and the latter (which as its name implies, encloses it), softer and of a browner colour.

The *cerebellum* is also divided into two lobes, and is made up of two substances like the *cerebrum*.

The *medulla oblongata* is entirely composed of the harder white substance before mentioned, with many irregular protuberances and productions.

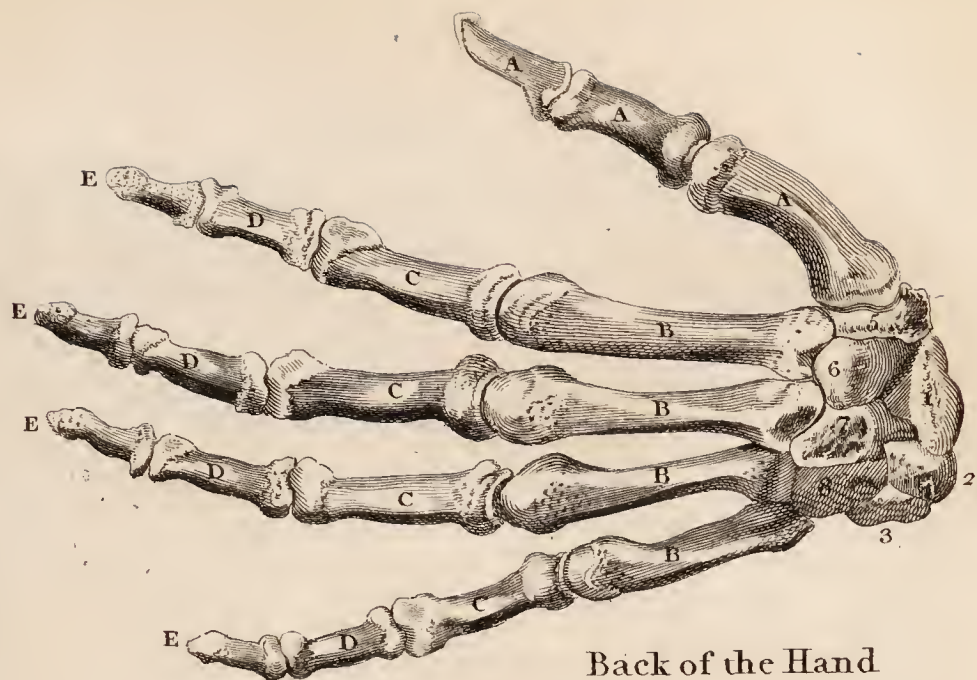
The term BRAIN is applied to the whole of that mass which, with its surrounding membranes, fills the cavity of the cranium, and is larger in man, in proportion to the size of the body, than in any other animal. The *membranes* of the brain consist of the Dura Mater, Tunica-



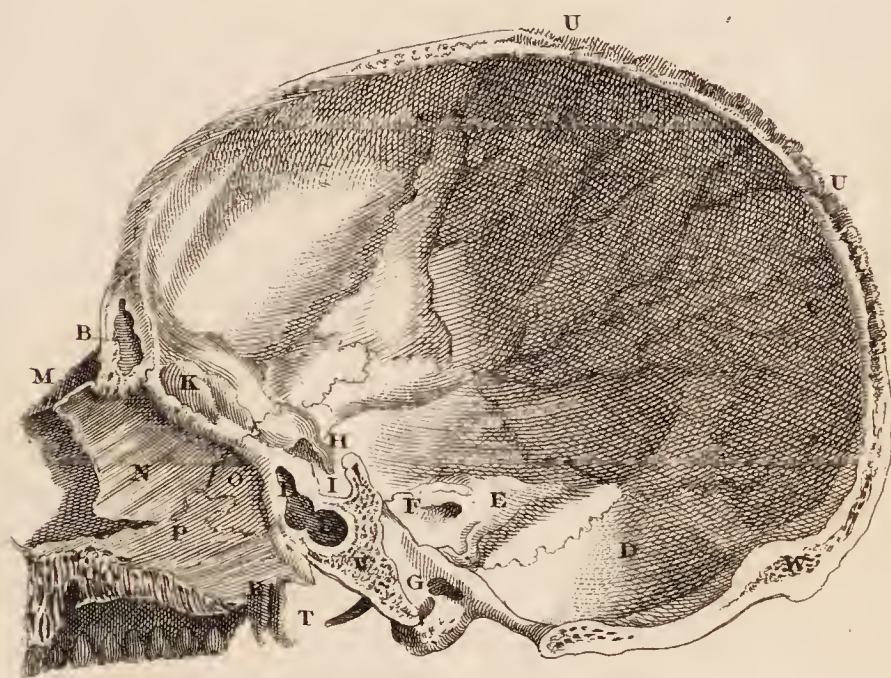
Arachnodia, and Pia Mater. The Dura Mater, named from its being of a firmer texture than the other two membranes, incloses the brain with all its appendages, and lines the different parts of the cranium. It is composed of one membrane, which, in several parts, is divisible by maceration into two, or even more layers or fibres. The *dura mater* serves as a defence to the brain, and supplies the place of a periosteum to the inside of the bones of the cranium, giving nourishment to them, as is evident from the numerous drops of blood which appear after removing the skull-cap. The Pia Mater, named from its tenderness, is somewhat of the nature of the former covering, but is extremely vascular. It envelopes the brain in general, enters double between all its convolutions, and lines the different cavities called ventricles. It serves to contain and support the vessels of the brain, and allows them to divide into such minute parts, as to prevent the blood from entering the tender substance of this viscus with too great force. The arteries of the Pia Mater are the same with those of the brain, and are derived from the internal carotids and vertebrals. The *veins* differ in no respect from those of the other viscera, excepting in this, that they do not accompany the arteries. The brain is divided into the Cerebrum, Cerebellum, Tuber Annulare, and Medulla Oblongata.

The CEREBRUM, or Brain, properly so called, is situated in the upper part of the cranium, which it completely fills. It is divided into two halves, termed hemispheres, which are separated from each other by the falx. Each of the hemispheres is of an oval form, or they somewhat resemble an egg cut longitudinal into equal parts. The inner sides are flat, the upper and outer parts convex, and the under surface irregular. The surface of the brain is divided into many turnings and windings, termed circumvolutions, which run in various directions, and are of different sizes and lengths on different parts of the brain. Between the hemispheres, a white substance is observed, called Corpus Callosum, from its being a little firmer than the former. It goes across the brain, under the falx, and is merely a continuation of the medullary substance, running horizontally, and joining the two sides of the hemispheres to each other. The outer substance

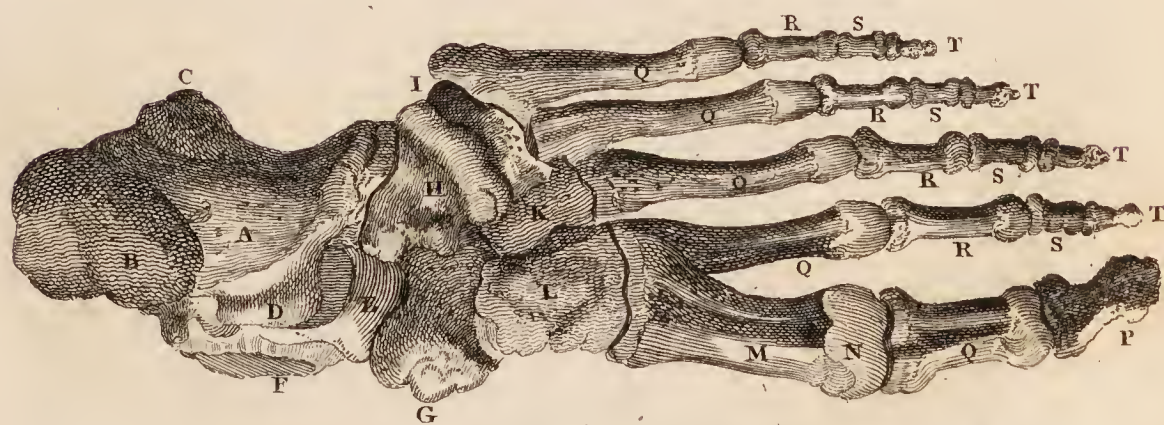




Back of the Hand



Human Skull cut perpendicularly



Human Foot





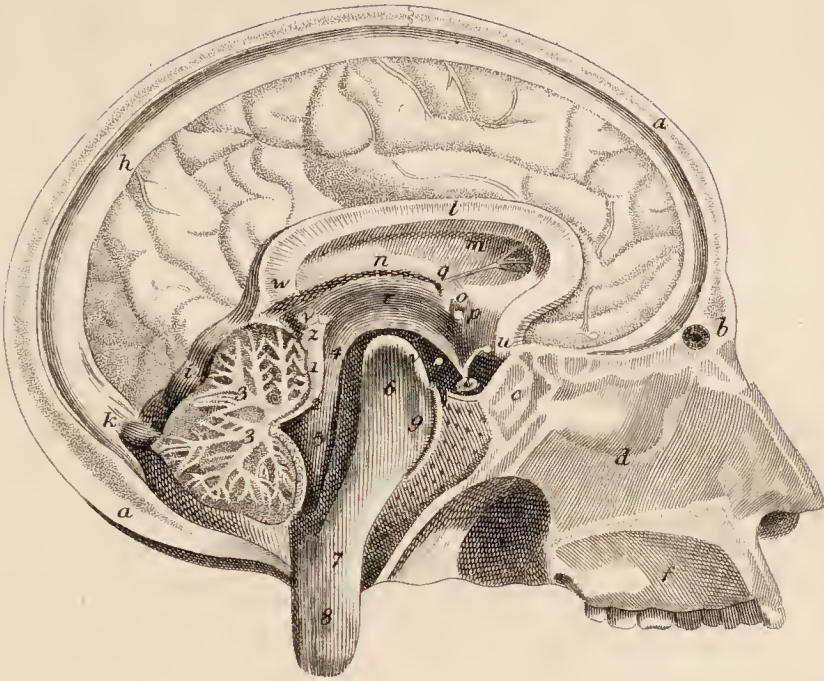
is termed *Cineriticus*, from its being of a greyish or ash colour, though a little tinged with brown; and cortical, from its surrounding the inner part of the brain, as the bark does the inner parts of a tree. The inner substance is termed white or medullary, and is considered as giving origin to the different nerves. It has been by some called *Excretory*, having been supposed to be formed of hollow tubes continued from the vessels of the cartical part; but no cavities have ever been observed on the soft tubes of which it is composed. Between the posterior parts of the *Corpora Striata* are situated the *Thalami Nervorum Opticorum*, which have a roundish form and medullary surface, and are of a striated appearance within, but the striæ are less distinct than in the *Corpora Striata*. Upon the surface of these bodies, there are small eminences or tubercles, some of which are placed upon their superior, and others upon their inferior, extremities. The inner parts of the *Thalami* are flat and contiguous, and above they are so closely connected as to form one continued surface, called *Commissura Mollis* of the *Optic Thalami*. The posterior parts of the *Thalami* turned downwards and outwards, after which they are elongated, to form the two white cords, called *Tractus Optici*. Over the *Thalami* is placed the *Choroid Plexus*, named from its being composed of a chorus of vessels and membranes. It is a fine vascular web, consisting of small ramifications of arteries and veins, connected by the *Pia Mater*, and spread upon the surface of the *Thalami*, and some of the adjacent parts.

The *CEREBELLUM* is situated in the inferior fossæ of the occipital bone, under the posterior lobes of the brain, and is separated from these lobes by the *Tentorium*. It is somewhat of a roundish form, though a little broader from one side to the other than from before backwards. It is only about a fifth or sixth part of the *Cerebrum*, and less complex. It is divided behind by the *Falx Minor* into two lobes or hemispheres, but has no separation above like the brain. Its surface is divided into numerous circumvolutions, which form arches in many parts, decussating each other at sharp angles. The circumvolutions run chiefly in a lateral direction, and are formed of lamina, with deep sulci between them, into which, as

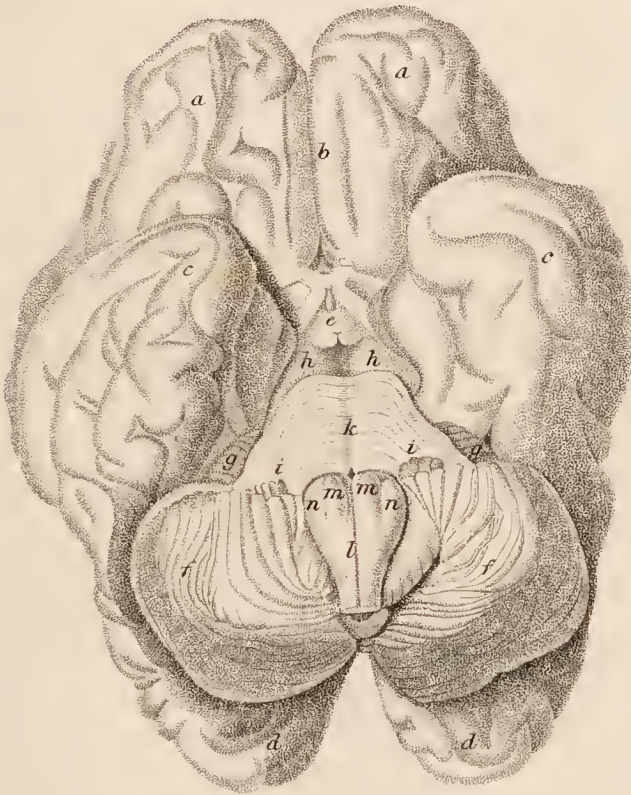


in the brain, the pia mater insinuates itself. This may be readily seen by making a puncture into the Arachnid coat, and blowing in air, till it distend the cellular substance, and separate the coats from each other. It has two middle eminences, called Appendices Vermiformes, from their resemblance to earth-worms, one of which is situated anteriorly and superiorly, the other inferiorly and posteriorly. Each of the lobes of the Cerebellum is again divided into monticuli or lobules, which have different names according to their relative situations, connections with other parts, &c. They vary a little in different subjects, but are easily distinguished from the direction of their convolutions. The substance of the Cerebellum consists of cineritious and medullary matter, as in the Cerebrum; but the cineritious bears a greater proportion to the medullary in the former than in the latter. When the Cerebellum is cut in a vertical direction, the medullary part is then found to bear a striking resemblance to the branching of the shrub called *Arbor Vitæ*; from which circumstance it has obtained the name of this shrub. From the medullary part of the Cerebellum, which forms the trunk of the *Arbor Vitæ*, two white cords arise under the name of *Crura Cerebelli*, or *Crura Posteriora*, or *Pendunculi Cerebelli*, which unite with the *Crura Cerebri*, to compose the *Tuber Annulare*, or *Pons Varoli*, so named from forming a ring or bridge over the *Crura*. This ring is intimately incorporated with, and formed by, these *Crura*. Continued from the *Tuber*, there is a large substance in form of an inverted cone, which extends to the foramen magnum of the occipital bone, under the name of *Medulla Oblongata*. Upon the surface of the *Medulla Oblongata*, two small eminences appear, which run longitudinally, and contiguous to each other, and, from their shape, have the name of *Corpora Pyramidalia*, or *Eminentia Pyramidales*. Between the *Corpora Pyramidalia*, there is a deep fissure, into which the pia mater penetrates, and where blood-vessels pass into the interior part of the medulla. At the outside of the former eminences there are two others, somewhat of the figure of olives, from which they are termed *Corpora Olivaria*, or *Eminentia Olivares*. More externally than these, are other two eminences, less evident than the last,

Vertical Section of the Brain.



Horizontal view of the Brain.







which have been described by some authors under the name of Corpora Pyramidalia Lateralia.

The Brain is the grand and primary organ of sense with which the mind is supposed to be most immediately and intimately connected, and from which the nervous influence is found, by experiment, to be communicated to all the other parts of the body.

The NERVES arise from the medullary parts of the brain, some in solid cords, others in separate threads, which afterwards unite into cords, and have their names in numerical succession, according to their situation,—beginning anteriorly. The *first* or *olfactory pair* of nerves, arise from the back part of the anterior lobes of the brain, and run towards the crista galli of the ethmoid bone, over which each forms a brownish-coloured bulb, from whence numerous small nerves are sent off. The *second pair*, or optic nerves, are the continuations of the thalami optici; they are united immediately before the infundibulum, and form an intimate intermixture of parts, and again separate, previous to their passing into the orbits. The *third pair* arise by numerous threads, which are soon collected into trunks. The *fourth pair*, which are the smallest nerves of the body, arise behind the testes, and have a long winding course. The *fifth pair*, which are the largest nerves in the brain, have each an anterior small, and a posterior large fasciculus, arising from the sides of the tuber annulare. The *sixth pair* arise from the beginning of the medulla oblongata, where it joins the tuber annulare. Each of the nerves of this pair has a small thread at its inner part. The *seventh pair* arise from the beginning of the lateral parts of the medulla oblongata, and are divided on each side into a portio mollis, and portio dura. The *eighth pair* arise by small fasciculi from the corpora olivaria. The *ninth pair* of nerves also arise by small fasciculi a little below the former, from the corpora pyramidalia.

All animals are provided with a ramification through their muscles of a peculiar matter called *medullary*, or with a system of nerves, the energy of which is wholly incomprehensible because the matter of the nerves is *sui generis*, or of its own kind.

The grand reservoirs of this nervous matter are in the skull and spine of the back. In the cavities of these it is continuous, and the intellectual capacity of animals is proportioned to the capacity of the



brain, and their dispositions varied by its arrangement. From these reservoirs of medullary matter ramifications take place in pairs of what are called nerves, and it appears that the perceptions and power of the animal to move each part depends on the continuity of the nerve into and through the part. It is in fact the nerves which feel, and the nerves are also the conductors of the will of the animal, though at the same time no motion is perceptible in the matter of the nerves themselves.

If the spine be divided or decays, sensation and power is destroyed in the lower parts of the body. Or if the medullary matter be injured or pricked with a sharp instrument, extreme pain arises, but if the injury be made to ascend towards the brain, it is found that no sensation is created by puncturing at the parts called the cerebrum or cerebellum, while on descending on the opposite side, the pain is again renewed. Hence it is concluded that the cerebrum and cerebellum are the centres or fulcrums of the system, and not subject to the perceptions of the parts.

It is even found by M. FLOURENS, that these large portions of the brain may be removed without pain to the animal, but, at the same time, the animal loses its powers of sensation and volition. The removal of these cerebral lobes deprives the animal of the powers of seeing, hearing, &c. but he continues the power of irregular undirected motion, and his mere animal faculties remain just like one asleep; while the removal of the cerebellum deprives him of the power of governing his motions or of exercising his will through the nerves on his muscles. It appears, therefore, that the sensations proceeding from the ends of the nerves in the eye, ear, smell and taste, and from the parts of nerves in feeling, centre or terminate in the cerebral lobes; and that the will and its power proceeds from the cerebellum; or that these, by some wonderful arrangement of atomic motion, acquire, by experience, the powers of sensation, volition, and memory, and are in the arrangements of a living animal like the fulcrum or centre of a lever.

The integrity of the cerebral lobes, says CUVIER, is indispensable to the exercise of the senses, and where they are destroyed the animal loses its spontaneous volition. It nevertheless exerts powers of loco-motion, but inadequate to any end, because the memory, which disappears with the lobes, no longer supplies the elements of comparison and judgment. The integrity of the cerebellum is necessary to govern acts of loco-motion, for, when destroyed, the animal is unable to preserve even its equilibrium. But irritability in the rest of the nervous system still continues, and every excited nerve is capable of producing action in the muscle in which it is distributed. All sensations must, however, arrive at these organs to become perceptions, and the suggestions of the will must depart from them; hence, when they are taken away, all sensation and self government is destroyed.

All the nerves of the body have their origin in the medullary substance of the brain, either directly or by the intervention of that portion of it called the spinal marrow. The nerves are cord-like substances, each composed of many threads lying parallel to each other, and appearing separate and distinct throughout their whole

course, each having its proper sheath or covering from the membrane called *pia mater*. Such appears to be the nature of their organization, when examined by powerful glasses, by which it has been demonstrated that a fibre of the retina of the eye or expansion of the optic nerve does not exceed the 32,400th part of a hair in size. The nervous cords thus composed of fibrillæ, cellular membrane or coat, pia and dura mater, have also numerous blood-vessels.

Nerves are generally imbedded in fat, or cellular substance, and pass along in the interstices of muscles and grooves of bones: but some of the larger branches run their course contiguous to arteries. They commonly separate or break off at an acute angle: and the respective branches are not proportionally smaller than the larger trunks from which they proceed. Different nerves in some instances unite into one cord, larger than either of the original branches whence they are derived, and after such union form a hard knot or knob, which is called a *ganglion*.

Nerves being the organs of sensation, generally derived from the brain, are distributed to all parts of the body and limbs, and enter into the structure or composition of every viscus. There are generally reckoned forty pairs of nerves, of which ten are derived from the brain, and the remainder from the spinal marrow. The ten pairs of nerves issuing from the brain are—1st, the olfactory or smelling nerves, of which the consistence is soft and the size slender. They arise from that part of the brain called the anterior commissure, and pass through the ethmoid bone to be distributed on the membrane, lining the nostrils. 2d, The optic, which distinctly arise from the *thalami nervorum*, first approach close to each other, and sometimes even unite, and their filaments decussate; but afterwards separating, pass through the sphenoid bone to form the retina of the eye.

The cavity of the chest or thorax contains the heart with its blood-vessels, and the lungs. It is lined with the membrane called pleura, of which a reduplication forms a particular covering for the contained viscera.

The heart is a strong hollow muscle enclosed in a loose membranous bag, called the pericardium, which adhering round the bases of the great blood-vessels at their going off from the heart completely envelopes it, but in a natural and healthy state without adhesion. The heart is situated obliquely in the thorax, its base or border end



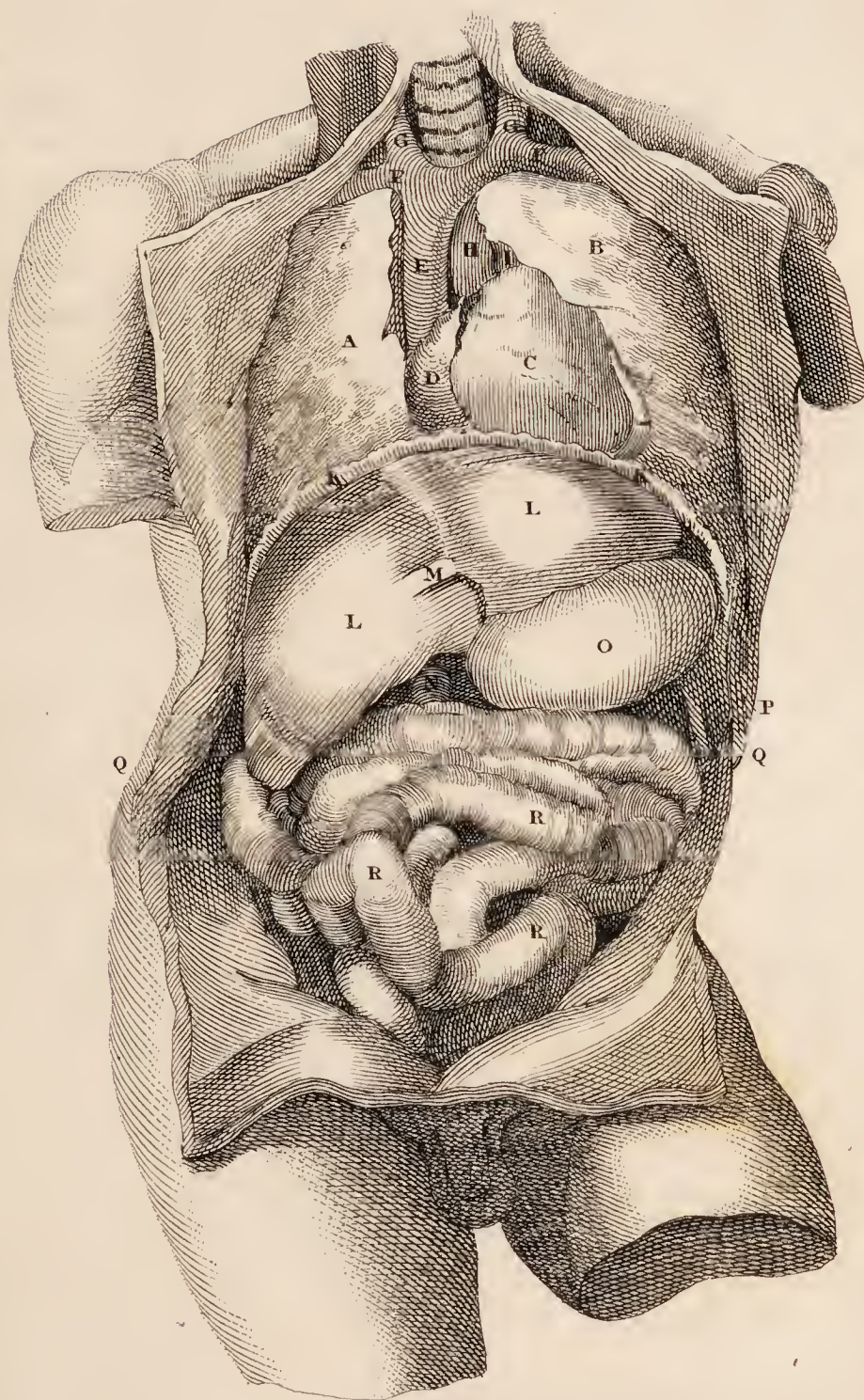
towards the right side of the bodies of the vertebræ, and its apex pointing to the sixth rib on the left side, the inferior surface lying on the diaphragm.

The human heart has two cavities, called ventricles, which are divided by a *septum* of muscular fibres into the right and the left. It has also two cavities denominated auricles, adherent exteriorly at the base, and communicating with the ventricles respectively by valvular openings, and denominated also right and left according to their respective position.

Each ventricle has two orifices, one from the contiguous auricle through which the blood enters, the other into the correspondent artery, through which the same fluid passes out. The orifices of the ventricles have valves; those at the arterial openings denominated semilunar, those at the orifice of the right auricle mitral, and at the left tricuspid from their respective forms. There is also a valve called that of Eustachius, from the celebrated anatomist who discovered it, at the termination of the vena cava inferior in the right auricle. These valves are strong membranous expansions, firmly connected with the columnar fibres of the heart by strong but extremely small tendinous cords, *corda tendinea*. The right auricle has *four* apertures; two of the venæ cavæ, the opening into the right ventricle, and of the coronary vein,—the vessel by which the blood is returned which has been supplied through the coronary arteries for the nourishment of the heart itself. The left auricle has *five* apertures; those of the four pulmonary veins from the lungs, and the opening into the left ventricle. The substance of the heart has its exterior fibres longitudinal, the middle transverse, and the internal oblique, and the superficies of the ventricles and auricles are invested with a strong and smooth membrane, which is extremely irritable.

From the heart arise the trunks of all the blood-vessels of the system, and it is the receptacle into which, after the circulation has been completed, the sanguineous fluid is returned by the great veins. The *aorta*, or great artery, arises from the left ventricle: the pulmonary artery from the right: the four pulmonary veins terminate in the left auricle, and the venæ cavæ in the right. The heart has besides its proper blood-vessels, the coronary arteries arising from the *aorta* and distributed to the substance of the heart itself: the pulmonary artery which proceeds from the right ventricle: the coronary veins which terminate in the right auricle, together with nerves and absorbent vessels.—*See the Descriptions of the Plates.*

# Viscera of the Human Body.







The arteries terminate either in the veins or in the capillary exhaling vessels, or with the branches of each other. The pulmonary artery proceeds from the right ventricle of the heart, and, dividing into two branches, is distributed throughout the lungs. The *aorta* arises from the left ventricle, and, forming an arch, descends near the spine. The arch of the *aorta* gives off three branches; the first forming the right carotid and right subclavian, the second the left carotid, and the third the left subclavian.

VEINS are membranous canals, not pulsating, which receiving by their extremities the blood from the termination of the arteries, gradually become larger in their approach towards the heart, in whose auricles their trunks are ultimately inserted. Veins have three coats or tunics, of a thin and delicate texture, but are not muscular like the arteries. The veins, throughout their whole course, from the most minute branches to the largest trunks, are furnished with valves formed by a duplicature or fold of their internal membrane, which facilitate the passage of the blood to the heart. The pulmonary veins, after having united in their passage out of the lungs into four principal trunks, terminate in the right auricle of the heart.

The LUNGS are two large bodies of a spongy substance, reddish in childhood, paler in maturity, and blueish in old age; convex next the ribs, and concave toward the diaphragm. Each lung is subdivided into smaller portions or lobes, the right lung being commonly the largest, on account of the obliquity of the *mediastinum*, by which the thoracic cavity is unequally divided. The structure of the lungs consists of membranous cells, air-vessels, and blood-vessels, divided and distributed in all directions into innumerable branches, gradually diminishing in size. The air-vessels are branches of the *trachea*, of a conical shape, terminating in membranous cells, which communicate together.

The lungs have blood-vessels of two kinds, pulmonary arteries and veins, by which the blood is carried to and returned from the lungs into the general circulation; and bronchial, by which the circulation is maintained of the blood necessary for the vitality of the organ.

The ABDOMEN is divided into three districts or regions,



the epigastric, umbilical, and hypogastric; with subdivisions. The epigastric region contains the stomach: the umbilical includes a space extending about four inches above and the like below the navel: and the hypogastric the remainder of the trunk of the body. The *viscera*, which constitute its contents, are, the stomach, the small and large intestines, the liver, gall-bladder, spleen, pancreas, kidneys, *uterus*, all covered generally with the membrane *peritoneum*.

The STOMACH is a large membranous and muscular bag, having a great and small curvature and extremity, a cardiac or upper orifice, and a *pylorus*, which is the opening into the intestine. It has a muscular coat, with several different layers within the peritoneal covering; and its interior surface, called villous, resembles the pile of velvet. In anatomical books, the stomach is often, by way of illustration, said to resemble the bag of a bag-pipe in form; for that musical instrument was originally formed from the stomach of a sheep.

The small intestines are the *duodenum jejenum*, and *ileum*. The *duodenum* is distinguished by its valves and glands; the *jejenum* by its ligamentary band, valves, and *plexus* of glands; and the *ileum* by its length, its ligamentary band, and less considerable valves and glands.

The œsophagus, stomach, small and large intestines, form one continuous tube from the mouth to the common emunctory of the body, varying in size and length in different subjects.

GLANDS are organic bodies, consisting of blood-vessels, nerves, and absorbents, intended for the secretion or alteration of particular fluids. They are divided into four classes, simple, compound, conglobate, and conglomerate; and the orifices of glands are said to be peculiarly irritable. Simple glands are hollow follicles covered with a membrane, and having an excretory duct through which the secreted fluid is evacuated; as the glands of the nose, tongue, fauces, trachea, stomach, intestines, and bladder, the sebaceous glands, and those of the ear. Compound glands consist of many simple glands, the excretory ducts being joined in one common trunk.

The LIVER, which is the largest gland of the body, consists of a great and a small lobe, with another diminu-

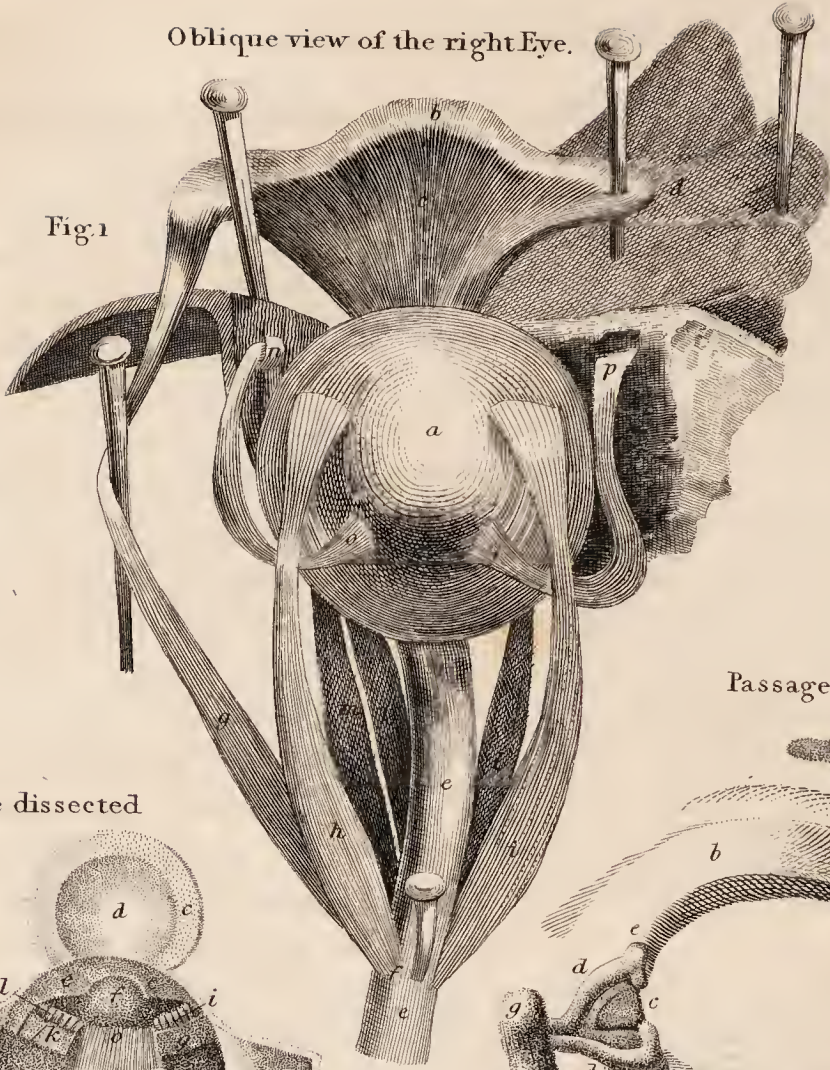




# HUMAN EYE.

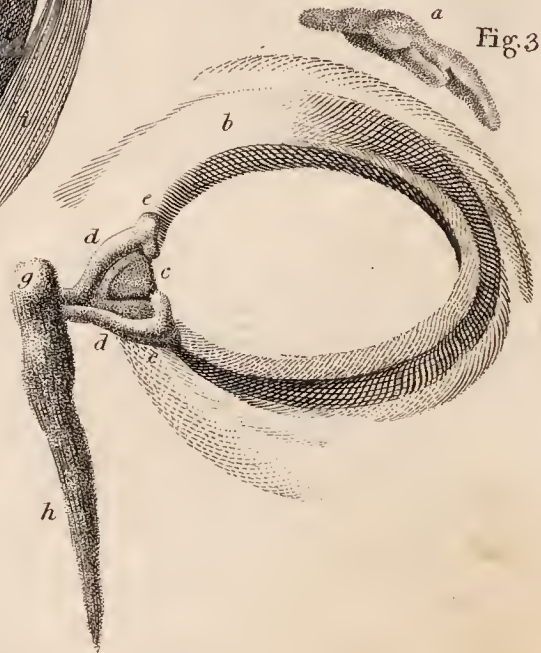
Oblique view of the right Eye.

Fig. 1



Passages of the Tears

Fig. 3



Coats of the Eye dissected

Fig. 2

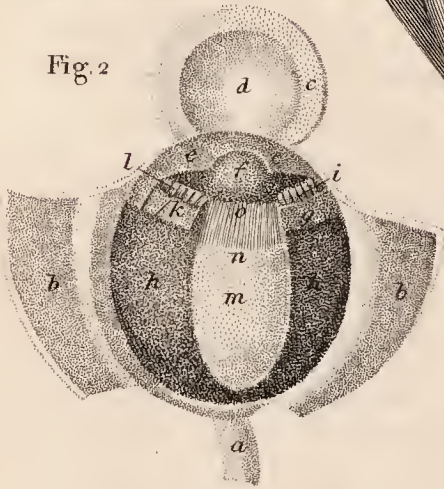
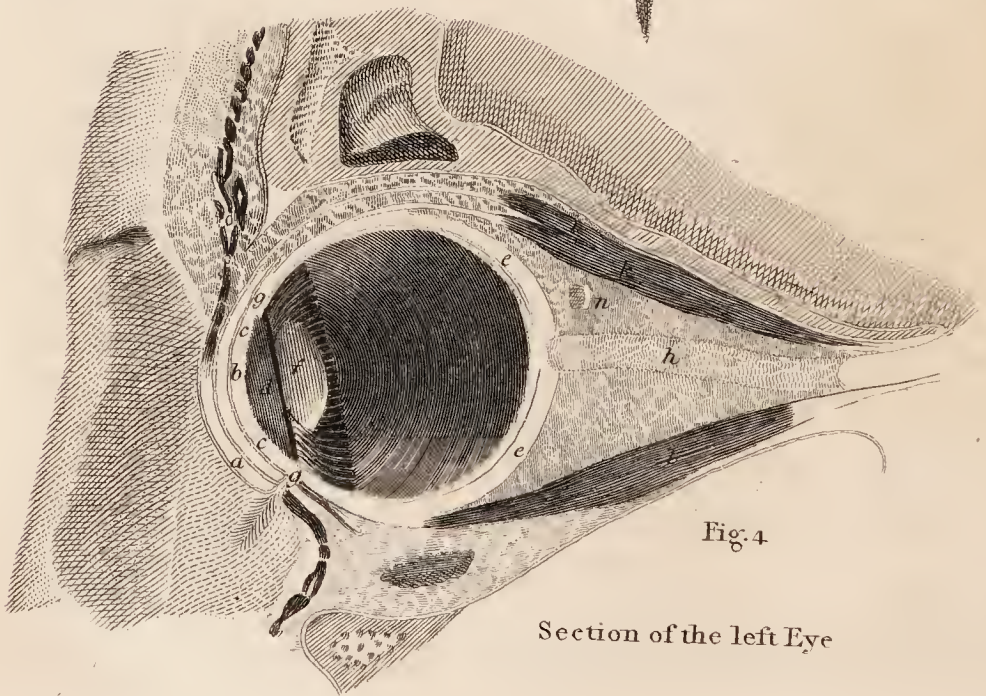


Fig. 4

Section of the left Eye





tive one termed *lobulus Spilegii*, from the name of the anatomist who first particularized it. The liver has a middle, a right, a left, and a round ligament ; its internal structure is composed of two terminations of the vena portæ, the pori bilari in which the bile is secreted, and the hepatic ducts terminating in a common trunk.

The gall bladder, or *vesicula fellis*, is an oblong bag placed beneath and partly between the *lobulus Spigelli* and its corresponding portion of the liver, in a deep sulcus or fissure in the inferior or convex side.

The SPLEEN is a spongy viscus of a livid colour : it is usually situated between the eleventh and twelfth false ribs in the left *hypocondrium*, of an oval form, convex towards the ribs, and concave internally.

The PANCREAS resembles in structure the salivary glands, and has a duct which enters the *duodenum*.

The KIDNEYS are oblong glands placed in the lumbar region surrounded by adipose membrane, and covered with a peculiar tunic closely adherent to their substance, which is exteriorly vascular and interiorly tubulated and papillous.

The cavity of the *pelvis* contains the urinary bladder, and certain organs of generation.

The ABSORBENT SYSTEM consists of the lacteals, lymphatics, the thoracic duct, and the glands called conglobate throughout the body. The *lacteals* are so denominated from the perceptible milky colour of the liquor which they contain. The *lymphatics* are small pellucid tubes containing a fluid thin and colourless as water. These vessels open into the thoracic duct, and their coats are thinner than those of the blood-vessels, but nevertheless are very strong. Their delicacy of texture prevents anatomy from ascertaining their number and ramifications. The *thoracic duct* is a membranous bag, which receives both lacteals and lymphatics, of which it is the common receptacle.

The globe of THE EYE has several coats ; the *sclerotic*, which gives it convexity ; the *cornea*, which forms the anterior part of the globe ; the *iris* or circle around the pupil ; and the *choroides* and *retina*, or expansion of the optic nerve.

The humours of the eye are three in number, the



*aqueous, vitreous, and chrystalline.* The aqueous humour is contained in a cavity formed in the interstices of the anterior portion of the coats. The vitreous fills a membranous capsule, and occupies more than three-fourths of the cavity of the globe of the eye. The chrystalline resembles a gummy mass; its form is lenticular, convex on the back, and flatter on the fore-side, and is contained in a fine membrane called its capsule.

The **NOSTRILS** are lined with a pituitary membrane spread over the *periosteum*, the surface of it secreting mucus. The use of the nostrils is for smelling, respiration, and speech.

The external **EAR** consists of two portions, one larger and more solid, and cartilaginous, called *pinna*; the other small and soft, called the lobe, which forms the lower part. It has four eminences, called *helix, antihelix, tragus, and antitragus*. The helix is the large folded border or circumference of the ear. The antihelix is the large oblong eminence which is surrounded by the helix. The tragus is the small anterior protuberance below the extremity of the helix, and in advanced age is usually covered with hair; and the antitragus is the posterior tubercle below the antihelix. It has four cavities: the hollow of the helix, the depression at the superior extremity of the antihelix, the concha under the antihelix, and the meatus auditorius externus. There are also ligaments, muscles, integuments, sebaceous and ceruminous glands, blood-vessels, and nerves proper to the ear.

The bony structure of the ear is divided into the *meatus externus*, the *tympanum*, the labyrinth, and *meatus internus*. The moveable or contained parts are four little bones placed in the tympanum, called *incus malleus stapes, and orbiculare*. The tympanum or drum is a spherical cavity with three interior eminences, one of which is pyramidal and perforated. The membrane of the tympanum is thin and transparent, perforated by a very small hole, and the internal cavity of the labyrinth is filled with an aqueous fluid secreted by vessels of the *periosteum*. It contains also the cavities of the mastoid cells, the opening of the Eustachian tube, the bony half canal, the *fenestra rotunda, and ovalis*, and the small hole before mentioned. The labyrinth has three portions, termed *cochlea,*



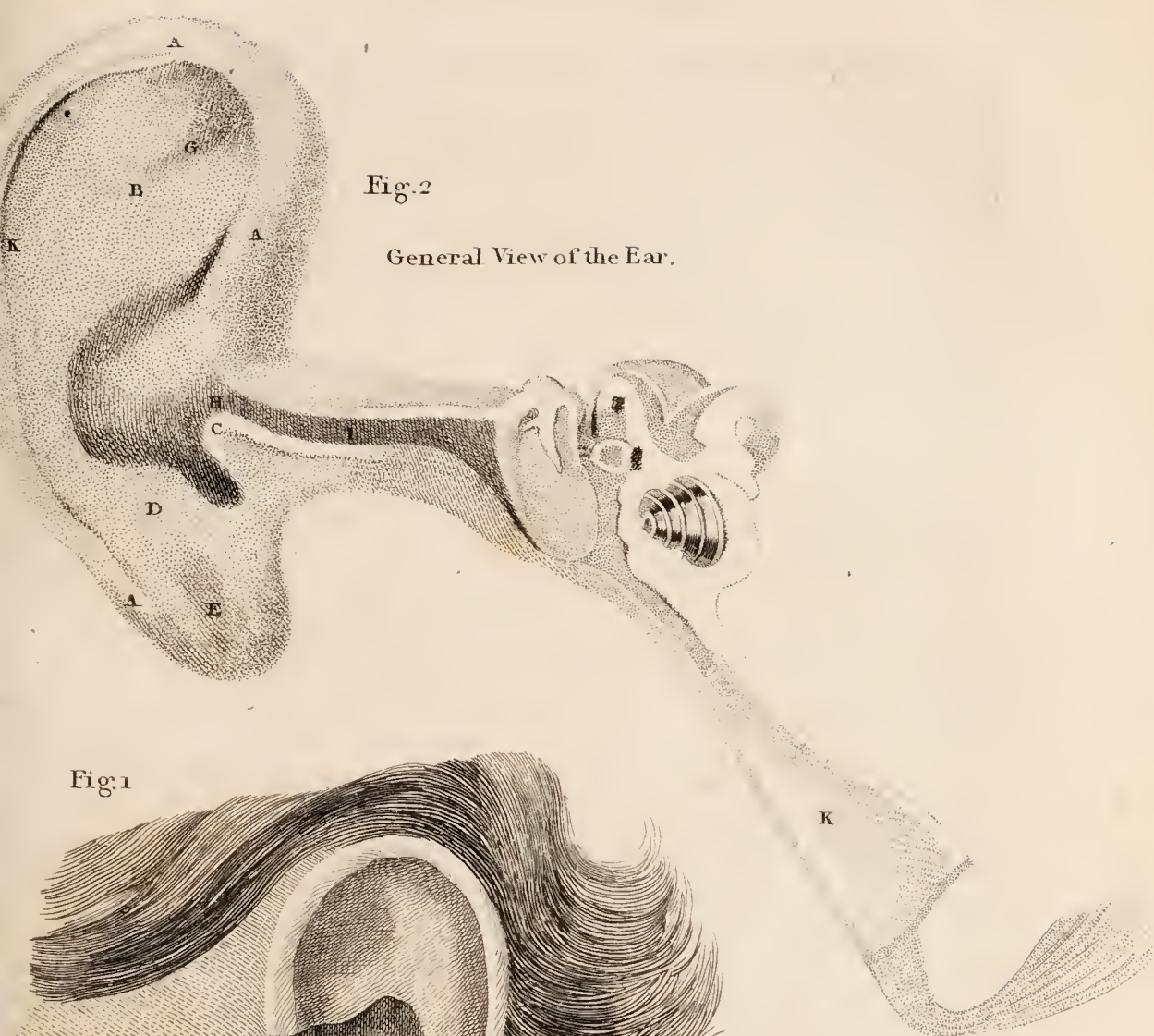


Fig. 2

General View of the Ear.

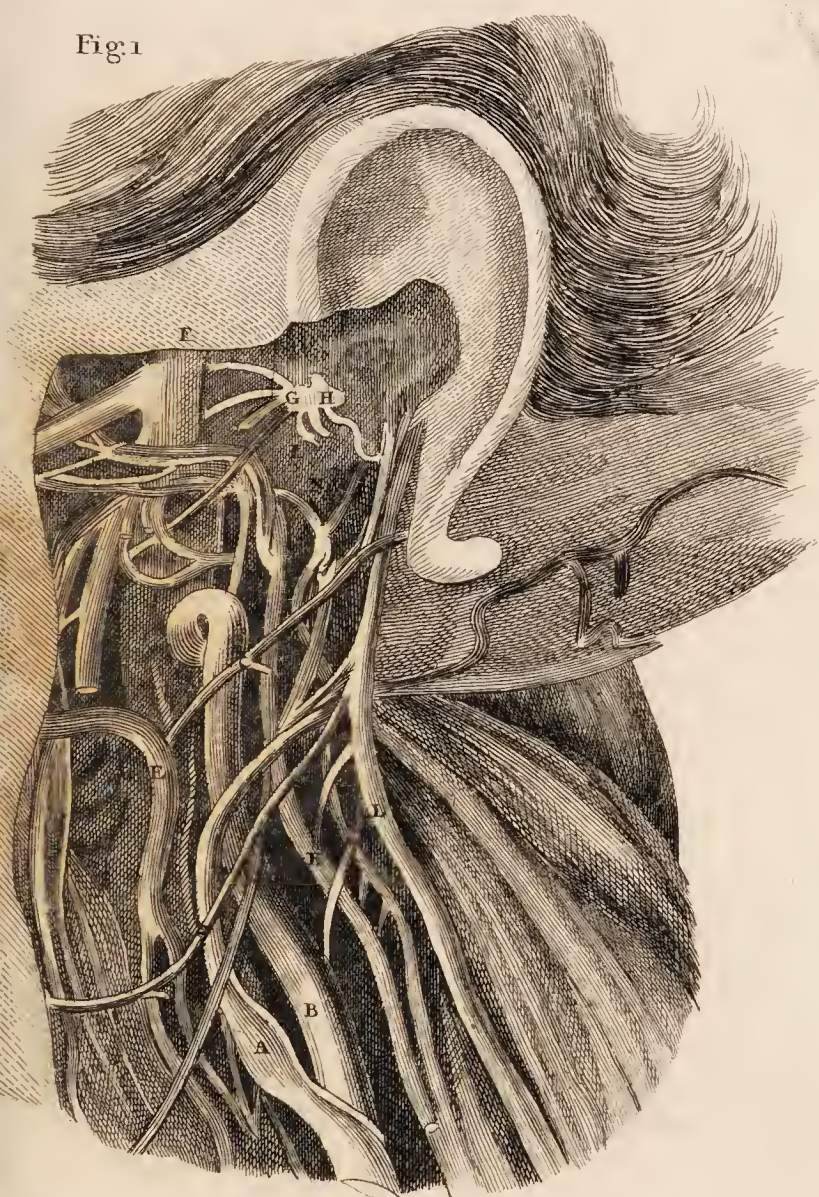


Fig. 1

Region of the Ear.

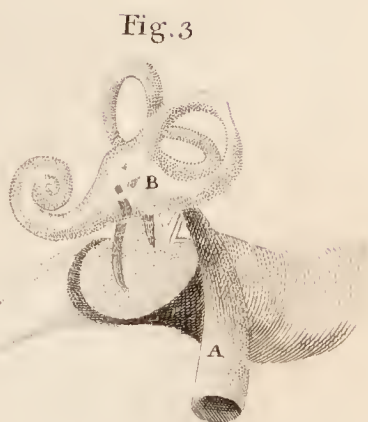


Fig. 3





*vestibulum*, and labyrinth proper, which last is the interior one, and contains three semicircular canals. The *meatus auditorius* is at the back of the *pars petrosa*, behind the vestibule and basis of the *cochlea*. The Eustachian tube leads from the tympanum to the posterior openings of the *nares* towards the palate.

The MOUTH consists of hard and soft parts; the bony portion is made up of the superior and inferior maxillary bones, the palate bones, and the teeth, with the *os hyoides*, and the *atlas* or first *vertebra* of the neck. Its external parts are the lips, the chin, and part of the cheeks. Its internal parts—the gums, palate, *septum*, *uvula*, *amygdalæ*, the tongue, salival duct and glands, bottom of the mouth, and common membrane.

The SKIN consists of three layers; the two interior, called *cutis vera*—and mucosum; and the exterior, which is denominated the cuticle.

Some naturalists assert, that all animals cast their skin either sensibly at one period of the year, or insensibly in scales, which are continually falling off at all times, as in mankind. The weight of the skin of a full-grown person is said to amount to about four pounds and an half. That layer of the skin denominated *rete mucosum*, is the seat of the colouring matter in negroes, their true skin beneath being as white as that of Europeans, and the muscles of the same colour; the pores of the skin are said by Winslow to be the extremities or ducts of sebaceous glands: but on maceration in water, the skin nevertheless appears to be whole and imperforate: some have therefore supposed that the fluids thrown off or absorbed by the skin, soak through the cuticle. It cannot be denied that although the skin be often greatly distended by water in dropsy, not a particle exudes unless the membrane be actually ruptured. The cuticle has been supposed to consist entirely of exudations of *mucus* dried and hardened into a membrane by the external atmosphere; but if it were not organic, and possessed of irritability, why should it be destroyed by caustic in exactly the same manner as other living fibres?

The skin is very elastic and of different degrees of density and firmness in different parts. It is perforated by innumerable holes or pores for the transmission of various matters from within outwards, and *vice versa*. The human skin is replete with blood-vessels by which it receives a reddish tinge, but after death it becomes white. Some parts of the surface of the skin seem to abound with



more nerves than others, and are more acutely sensible ; the lips, the points of the fingers, &c. &c.

## LECTURE LXV.

### PHENOMENA OF HUMAN LIFE, AND ITS DISTURBANCE BY DISEASE.

THE VITAL FUNCTIONS may be divided into those which relate to the preservation of the individual, and those that belong to the continuation of the species. Those functions by which aliment is assimilated for the nourishment of the body are, respiration, circulation, digestion, absorption, secretion, nutrition, and perspiration or exhalation.

The functions or actions of the body are divided into vital and animal, or natural. Vital functions are those which being interrupted superinduce death—as the motion of the lungs, heart, and arteries. Animal functions include the operations of the senses, imagination, judgement, and volition.

Motion is effected by the muscular fibre contracted by volition, but the will can only exercise this power from its seat in the cerebellum, through the *medium* of the nerves. The source of the power of motion is in the air within which the animal lives, the motions of the atoms of which are transferred to the body by the act of inspiration and respiration.

Sensibility is the faculty of perception by the contact of an extraneous body, and this principle is generally diffused in our corporeal organs, but in different degrees. The pain, or at least the effect of irritation from even the finest point of any substance being applied to the skin, proves the general and universal diffusion of the sentient principle to the whole surface of the body ; but the superficies of the cavities of the intestines, *viscera*, and blood-vessels, are devoid of such sensibility. Its seat or focus is in the part of the brain called the *cerebrum*.

An animal is a vegetable with the soil in the cavity of the stomach, where the animal roots centre ; and are those of conception, generation, gestation, and growth : to which may be added maturity and decay from old age.

DIGESTION is the change which the food or soil under-

goes in the stomach and intestines, and by which it is converted into a substance capable of being received into the lacteal vessels, and carried by them into the general circulation. The food is first reduced in the mouth to a pulpy consistence by mastication with the teeth, and mixed with large quantities of *saliva*; it is then swallowed into the stomach, where it is converted into a soft pap, called *chyme*.

The CHYME passes through the pyloric orifice of the stomach into the intestine *duodenum* (so called on account of its length), and after being subjected to further changes, is at length converted into two different substances, *chyle* and *excrementitious matter*. CHYLE is a liquid resembling milk, both in colour and consistence. It contains an albuminous part capable of coagulation, serum, and globules like cream, with salts, not apparently different from what is denominated the sugar of milk. The process of chyli-fication appears to be effected chemically, for chyle is entirely different from chyme. After the chyle has been separated from the common mass, it is absorbed by the orifices of the lacteal vessels. The chyle, after it has been absorbed by the lacteals, is carried into the thoracic duct, where it is mixed with lymph brought by other vessels denominated lymphatics, and thus united enters the blood-vessels at the junction of the left subclavian and carotid veins.

Thus the food or soil received into the stomach, after comminution by the teeth, and being mixed with *saliva*, is converted into *chyme* by the gastric juice: the chyme passes into the intestines where it is converted into *chyle* and *excrementitious matter*, which last being separated by means of *bile*, is evacuated from the body, whilst the chyle is absorbed by the *lacteals* and conveyed into the *blood-vessels*.

The circulation of the blood is performed by the united action of the heart, the arteries, and the veins. The blood returned by the *venæ cavæ* to the right auricle of the heart stimulates that organ to immediate contraction, by which the greater part of its contents is thrown into the contiguous ventricle, and its regurgitation being prevented by the shutting of the tricuspid valves, the ven-



tricle projects it into the pulmonary artery, and thus through the lungs.

In the lungs, the blood is exposed to the action of the atmospherical air, the motions of which it receives, and becomes warm in consequence; and it is afterwards returned by the pulmonary veins into the left auricle. By the contraction of the left auricle, and the shutting of the tricuspid valves, it is thrown into the corresponding ventricle, from which in like manner it passes into the *aorta*, and is distributed by its numerous ramifications to the minutest vessels, and the remotest parts of the system.

The contraction of both auricles and both ventricles is simultaneous, but the dilatation and contraction of the auricles and ventricles alternate. The quantity of blood propelled by each ventricle at every contraction is, in the adult, about two ounces. The propelling force has been estimated so variously and so vaguely, that what has been said on the subject may be regarded as merely conjectural.

The pulsation of the arteries is not wholly dependent upon the contraction of the heart, but is partly occasioned by the blood propelled into the *aorta* meeting with obstruction from the resistance of the antecedent columns, and being forced against the sides of the tube. The pulse beats in early infancy from 120 to 150 in a minute, diminishing in frequency until puberty, when it is usually about 80: in maturity from 70 to 75, and in advanced and declining age 60 or under. There is much variety in the natural standard even of a healthy pulse. Some persons have a pulse at 100, and it is said that in others it has been as low as 27. When the natural standard of any person in health is e. g. 73, it seldom is found to vary, unless as a consequence of disease or irritation.

The origin of the *veins* is in the minute extremities of the arteries, which having gradually lost their muscular coats as they diminish in size, at length become wholly membranous and capillary.

The ordinary quantity of *blood* in the vessels of the human body is about thirty pounds, liable, however, of course, to very considerable variations. The blood, when drawn out of the body, and suffered to remain at rest, is separated into two distinct parts, called *serum* and *crassa-*

*mentum*. The serum holds in solution, according to modern chemists, albumen, gelatine, soda, phosphat and muriate of soda, nitrat of potash, and muriat of lime. The crassamentum consists of the colouring part, holding in solution soda, phosphat of lime and iron; and secondly, fibrine or coagulable lymph.

Respiration, or the first spring of animal life, is the process by which air is alternately drawn into the lungs, and thrown out again; a process essential to animal life, by which the blood is warmed and energy derived. Common atmospherical air is the fluid respired, and no other gaseous fluid can be safely substituted instead of it. The oxygenous part is fixed, and transfers its momentum to the blood, creating heat and energy.

There are certain gases totally unfit for respiration, such as the carbonic acid, ammoniacal, &c. There are other gases which may be inhaled and respired, without any opposition from the pulmonary organs, but nevertheless occasion death by depriving the system of its necessary supply of that principle which is essential to the preservation of vitality; such are hydrogen and azotic gas. The gases denominated carbonated hydrogen, carbonic oxide, and nitrous gas, destroy life by their specific properties. Some gases are, for a certain length of time, innoxious; but, by being continually inhaled, produce fatal effects, e. g. nitrous oxide, and oxygen gas. Common atmospherical air alone is found fit for the purpose of respiration. The quantity of air respired differs greatly in different animals, and in the same animal at rest and in motion. Man, and other hot-blooded animals, require a perpetual renewal of air in the lungs: the class of amphibia can suspend the function of respiration for a considerable time.

The changes produced upon the air by respiration are, that it is diminished in quantity; about a nineteenth or twentieth part of it being absorbed; and that it acquires a proportion of carbonic acid, and also of water: but the estimate formed by different chemists of the quantity of these fluids respectively, differs very considerably. The colour of venous blood, which is a dark reddish purple, is changed by the fixation of oxygen atoms into a bright red during its passage through the lungs. No chyle can



be distinguished by its milky colour in the blood, after it has passed through the lungs.

When the blood returns to the lungs, it absorbs or fixes a new dose of aerial atoms, gives out azotic gas, carbonic acid gas, and watery vapour, and repeats these changes as often as the blood passes through the pulmonary vessels. Besides the changes thus made in the condition of the blood, by respiration, the temperature of animals depends upon it. The human temperature is 98. Animals which do not breathe have a temperature but little superior to the *medium* in which they live. Man and quadrupeds which breathe, have a temperature considerably higher. Birds that respire a still greater quantity of air than man, have a temperature up to 103, the degree being always proportional to the quantity of air breathed in a given time.

SECRETION is the process by which various fluids are separated from the blood by means of the glands. The secretions are divided into the saline, as sweat and urine; the oleaginous, as the fat, cerumen of the ear, &c.; the saponaceous, as bile and milk; the mucous, as on the surface of membranes, &c. The fluids secreted from the blood are entirely different from each other, as well as from that whence they are separated, and there are various kinds of secretory processes.

Milk, which is composed of water and oil, perhaps mixed with absorbed fat, is secreted by the conglomerate glands of the *mammæ*. Bile is supposed to be deposited in the *pori biliarii* from the *vena portæ*, without intermediate follicles: that portion of it which is deposited in the gall-bladder also undergoes a subsequent change from the action of the glands proper to the internal coat of that viscus.

The animal machine can only be maintained by an incessant change of the particles which enter its composition, so that at distant periods the same individual body does not contain a single particle of the original constituent parts. Experiments in proof of this fact have been made by feeding animals on madder, which imparts to the bones its red colour; but on ceasing to introduce this substance into the system, the colour is soon entirely lost. There is a continual decomposition and renewal even of

those solid portions of the frame, which from their texture must be least susceptible of change.

During sleep, the faculties of the mind are partly at rest : the judgment or power of arranging, comparing, and examining ideas is entirely dormant, and volition is suspended. DREAMING is an intermediate state between sleeping and waking ; some organs continuing in a state of activity, whilst others are quiescent.

The VOICE is produced by air expelled from the lungs through the trachea, and made to vibrate in the *glottis*. The modifications of the voice depend upon, or at least are considerably influenced by the size and force of the glottis, and the tension or relaxation of the ligaments which form the opening from the glottis into the mouth. The state of tension in the ligaments of the glottis always corresponds with the narrowness of the aperture : the voice is accordingly acute in young and weak persons and females. About the age of puberty the diameter of this opening is considerably enlarged, and the tone of the voice becomes hoarser and more fixed. The voice is also influenced by the length of the *trachea* : singers, in lowering the voice from note to note, as in running down the gamut, shorten the neck, and lengthen it when ascending the scale. The strength of the voice depends on the volume of air expelled, and the power of vibration possessed by the tube through which it passes. Thus birds have a very strong voice, when compared with their size ; and the *trachea* is provided with a double larynx almost entirely cartilaginous.

Speech is one of the distinguishing characteristics of the human race. In order to the production of this faculty, the motions of the tongue, lips, and larynx, all contribute, by effecting certain modifications of the voice. The ape, in which the air in passing out of the larynx rushes into the hyothyroid sacs, is perhaps by this variety abridged of the power of speech.

Singing is performed by an enlargement or contraction of the glottis, an elevation or depression of the larynx, an elongation or shortening of the neck, an accelerated prolonged or retarded inspiration, and by either long, short, or hurried expirations.

The justness and agreeableness of the voice, and the



variety of its inflections, depend on the conformation of its organs, the flexibility of the glottis, elasticity of its cartilages, form of the mouth, &c. If the larynx or nasal fosse be unequally divided, it is sufficient to occasion a defect in the voice. Stammering and lisping are occasioned by disproportion of the tongue, the *frænum* of it being too long to admit of its free motion, and by deficiency or irregularity of the teeth.

A DISEASE consists of an alteration of the solids or fluids from that condition in which they naturally subsist : or a change in the organization of the body, or of the action of the vital principle, producing an inability, or difficulty of performing the functions of the whole or some part of the system ; or pain ; or some preternatural evacuation. Every disease must have a cause, which is brought into action either immediately without any previous alteration, or intermediately when the external application to, or impression upon the body or the mind, occasions such an alteration of the system, as is productive of irregularity and disorder.

Those diseases are called *acute*, which suddenly taking place, are accompanied by increased action of the heart and arteries, proceed rapidly to their height or acme, and are attended with danger. *Chronic* disorders are those which are opposed to the acute, by their slow progress, and being generally free from danger.

The state of the PULSE is of great importance in various diseases. When the beat varies from the natural healthy standard, which is usually about 73 in a minute in most individuals, from puberty to old age, it is said to be either quick or slow, regular or irregular, strong or weak : these varieties being dependent upon the power of the heart and arteries with regard to their contractions. It is hard or soft, according to the state of the arterial coats, and as they present a tense and rigid, or a more relaxed and yielding feel to the fingers laid upon the artery. It is full or small, as the measure or quantity of blood propelled at each pulsation is copious or reduced. There is also a gliding pulse, the result of that sort of indistinct and imperfect contraction which occurs in extreme weakness, and at the point of death :—it has been called the *pulsus celer*. Unless in case of organic disease

of the arteries, the beat of the pulse in all parts of the body is simultaneous.

The febrile class of Cullen is divided into four orders. 1st, *Febres*, fevers; 2dly, *Phlegmasiæ*, inflammations; 3dly, *Exanthematica*, eruptive diseases; and, 4thly, *Hæmorrhagia*, or discharges of blood.

The Neuroses, or nervous class, has also four orders, viz. 1st, *Comata*, or diminution of voluntary motion; 2dly, *Adynamiciæ*, or defects in the vital power; 3dly, *Spasmi*, or spasmodic diseases; and, 4thly, *Vesaniæ*, or mental disorders.

The Cachexiæ class includes three orders—1st, *Marcores*, or an emaciation of the body. 2dly, *Intumescenciæ*, swellings or an increase of bulk in the soft parts. 3d, *Impetigines*, or deformities; and *Defedations*, from general disease.

The class Locales includes eight orders—1st, *Dysæthesiæ*, or organic diseases; 2d, *Dysorexiæ*, or disorders of the appetite; 3d, *Dysainessiæ*, irregularity of action; 4th, *Apræanosas*, excessive discharges without fever; 5th, *Epischeses*, or suppression of evacuations; 6th, *Tumores*, tumors; 7th, *Ectopiæ*, dislocations; and, 8th, *Dialyses*, wounds and fractures.

The effect of diseases in destroying life is exemplified in the annexed Engraving, in which the several proportions are expressed according to the London bills of mortality. The comparative duration of life is also given from the best authority. These Tables merit the attentive study of the reader, as a practical moral lesson. They indicate the frail tenure of life and enjoyment, and prove that the imperfect reason of man, by interfering with the course of nature, subjects him to more diseases than are suffered by other animals. His clothing, his diet, his habits, are all artificial, and tend to counteract the regular economy of nature, while his indulgence in excesses and fancies create a multitude of miseries, and punish him without improving his practices.

As the knowledge of anatomy and phisiology necessarily precedes that of diseases, so an acquaintance with the means by which the body is sustained in health, properly introduces the notice of medicines employed for



the cure of diseases. Not only the digestive organs, but the lungs, and the external surface of the body, contribute to the admission of nutritious matter into the animal system.

The ordinary food, or stomachic soil, of the human race, consists of animal and vegetable matter variously prepared by culinary art; and of certain liquids, either naturally or artificially produced. The seeds, roots, leaves, and fruits of plants, constitute an important and considerable part of the food of the human race.

The principal farinaceous seeds are wheat, barley, oats, rye, millet, maize, and rice. The roots which abound most with the saccharine principle, are the sugar-root, carrot, and beet: after these follow the turnip, parsnip, parsley-root, potatoe, asparagus, &c. which contain less sugar, but have a portion of farina, very fit for food. Sugar also abounds in the sap of the maple and many other trees; especially the cocoa-nut-tree, the avaga Americana, &c. There are many vegetables which are also nutritious from their containing oil, mucilage, or acids; such as fruits, viz. pears, apples, plums, apricots, nectarines, peaches, strawberries, grapes, oranges, melons, cucumbers, figs, raisins, &c. Of these, the cold and watery are usually the most difficult of digestion.

Almost all the various productions of Nature, animal, vegetable, and mineral, have, at different periods, entered into the composition of medicines.

NARCOTICS, or Anodynes, are those medicines which ease pain, and procure sleep, and are exhibited, in small doses, as stimulants, in fevers, gout, hysteria, epilepsy, and sometimes dropsy: and in larger quantity, as sedatives, or anodynes, in all spasmodic and painful affections.

The principal medicines of this class are, 1. Alcohol, 2. Æther, 3. Camphor, 4. Opium, 5. Hyoscyamus, 6. Belladonna, 7. Aconite, 8. Conium, 9. Digitalis, 10. Nicotiana, 11. Stramonium, and 12. Strychnous Nux Vomica.

ANTISPASMODICS are medicines capable of allaying irritation and inordinate motions, particularly such as take place in muscles, which, in their natural state, are under the control of the will.

They consist chiefly of, 1. Musk, 2. Castor, 3. Ammonia, 4. Asafoetida, 5. Sagapenum, 6. Galbanum, 7. Valerian, and 8. Saffron.

TONICS, are so denominated, from their increasing the force of the muscular fibre, and acting as permanent stimulants.

Vegetable tonics are, 1. Cinchona, 2. Serpentaria, 3. Contrayerv, 4. Cascarilla, 5. Calumba, 6. Quassia, 7. Gentian, and 8. Anthemis, or Camomile.

Mineral tonics are, 1. Hydrargyrus, 2. Steel, 3. Zinc, 4. Copper, 5. Arsenic, 6. Barytes, 7. Lime, 8. Nitric acid, and 9. Oxymuriate of potash.

**AROMATICS** are medicines which have a spicy scent, a pungent taste, and a tonic, cordial, or exhilarating and stimulant effect.

They are vegetable productions, of which the chief may be thus enumerated, 1. The Orange, 2. The Lemon, 3. Cinnamon, 4. Cassia, 5. Sweet-scented Flag, 6. Zedoary, 7. Yellow Sanders, 8. Red Sanders, 9. Cloves, 10. Capsicum, 11. Black Pepper, 12. Long Pepper, 13. Cubebs, 14. Pimento, 15. Cardamoms, 16. Carraway, 17. Coriander, 18. Anise, 19. Fennel, 20. Dill, 21. Cumin, 22. Angelica, 23. Peppermint, 24. Spearmint, 25. Penny-royal, 26. Hyssop.

**ASTRINGENTS**, are those medicines which possess the power of condensing animal fibres, imparting a rough and dry taste, and corrugating the skin of the mouth. These medicines restore muscular power, when it has been diminished by excessive vascular action or undue secretions.

The principal vegetable astringents used in medicine are, 1. Oak-bark, 2. Galls, 3. Tormentil, 4. Bistort, 5. Alkanet, 6. Logwood, 7. Red-roses, 8. Bears' Whortle-berry, 9. Catechu.

Mineral astringents consist chiefly of, 1. Acids, especially the Sulphuric, 2. Argillaceous Earth or Boles, 3. Alum, 4. Lime, 5. Carbonates of Lime, as Chalk, Crabs' Claws, and Oyster Shells, 6. Lead, 7. Zinc, 8. Steel, 9. Copper.

**EMETICS** are medicines which excite vomiting.

The principal vegetable emetics are, 1. Ipecacuan, 2. Squill, 3. Mustard, 4. Asarabacca, 5. Tobacco.

Mineral emetics are, 1. Antimon, 2. Sulphate of Zinc, 3. Sulphate of Copper.

**CATHARTICS**, are those medicines which accelerate the peristaltic motion of the bowels, and produce fecal evacuations.

The principal cathartics, in common use, are, 1. Jalap, Colocynth, Elaterium, Buckthorn, Aloes, Scammony, Gamboge, Submuriate of Mercury, Senna, 2. Sulphate of Soda, Sulphate of Magnesia, Supertartrate of Potassa, 3. Rhubarb and Roses, 4. Manna, Castor Oil, Olive Oil, Sulphur, Cassia, Muriate of Soda, 5. Tobacco, Hyoscyamus, Digitalis, and Black Hellebore.



**DIURETICS** are those medicines which increase the urinary discharge, either by a direct stimulus of the kidneys, a sympathetic excitement from action produced in the stomach, or the increased energy of the absorbent vessels.

The saline diuretics are, 1. Supertartrate, 2. Nitrate, 3. Acetate of Potassa, 4. Muriate of Ammonia.

Vegetable diuretics are, 1. Digitalis, 2. Tobacco, 3. Solanum, 4. Gratiola, 5. Broom, 6. Juniper, 7. Copaiba.

**DYAPHORETICS** are medicines capable of increasing the cutaneous discharge, called perspiration.

The principal in modern use are, 1. Ammonia, 2. Calomel, 3. Antimony, 4. Ipecacuanha, 5. Opium, 6. Camphor, 7. Guaiacum, 8. Mezereon, 9. Sarsaparilla, 10. Sassafras, 11. Horse-radish, 12. Sage.

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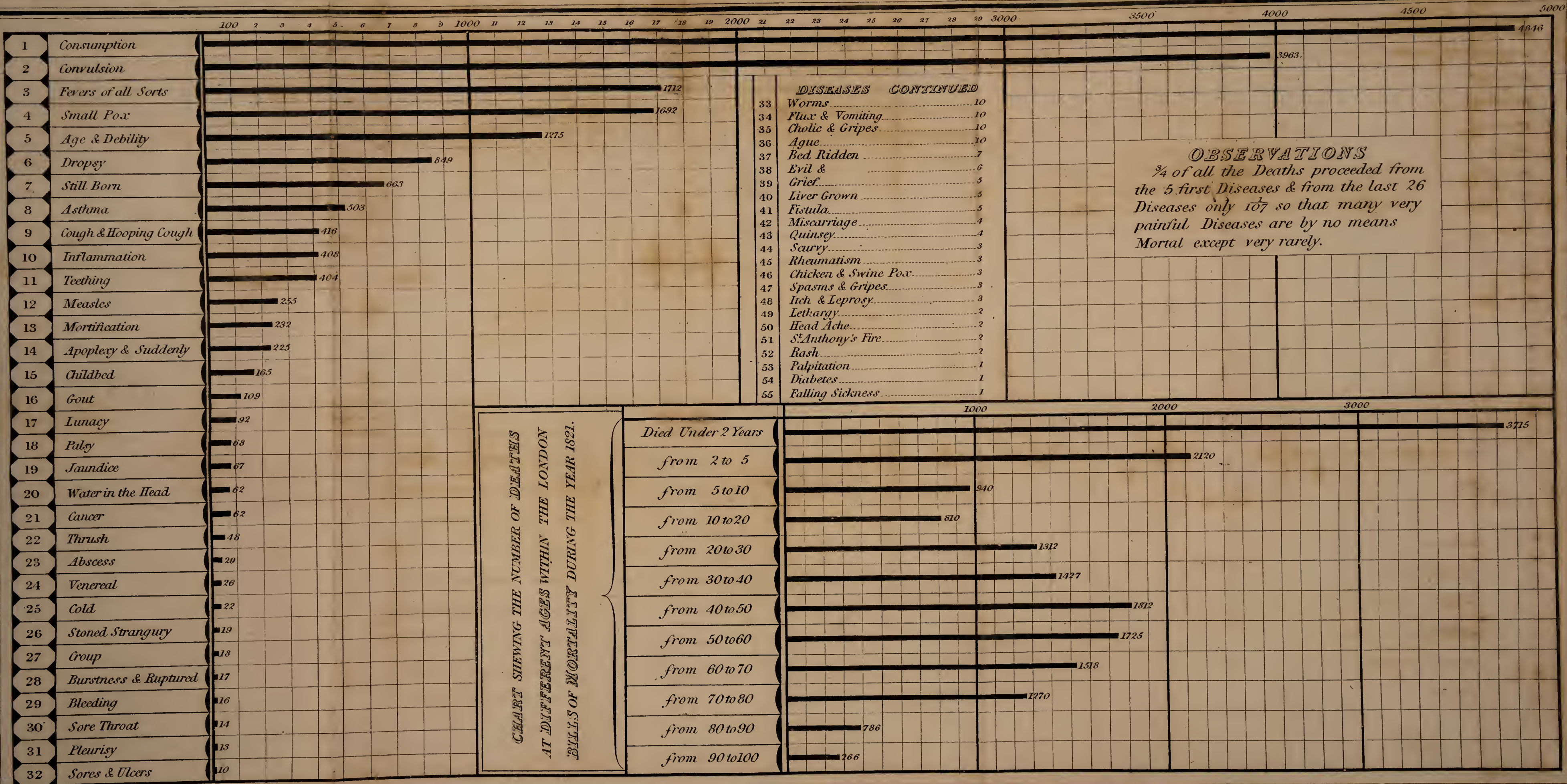
M. Buffon and many other writers have indulged in speculations on the varieties of the human race. They have deduced from difference of colour, stature, and physiognomy, no less than six varieties, as follow:

1. The Laplanders and other Inhabitants of the Frigid Zone, all under five feet high, with disgusting physiognomies, and dark brown or black skins.
2. The Tartar and Kalmuk race, including the Chinese, distinguished by the smallness and distance of their eyes, their olive complexions, and a sort of feline physiognomy.
3. The East Indians, distinguished by the depth of their colour between the pale olive and black, while their features resemble those of Europeans.
4. The Negroes of Africa, with black skins, woolly hair, flat nose, and thick lips
5. The American-Indians, a copper-coloured race, with black hair and slight beards.
6. The European family, with white and vermillion skins, including the Greeks, many Turks, and all the western nations of Europe.

Endless have been the speculations how far these varieties have or have not sprung from one parent stock, the diversities being supposed to be created by the operations of climate, food, and manners, during an endless



NATURE DISPLAYED.  
CHART SHEWING THE NUMBER OF DEATHS ARISING IN ONE YEAR FROM DIFFERENT DISEASES WITHIN THE LONDON BILLS OF MORTALITY DURING THE YEARS 1796-97-98 99 & 1800 ON AN AVERAGE.







succession of ages. That Cain found a wife in the land of Nod, proves in the opinion of many pious commentators, that the history of the family of Abraham was the chief object of the divine historian.\* Many philosophers have puzzled themselves by endeavouring to account for the origin of all organized beings, and of man among the rest ; but it is impossible for any rational person not to arrive at the conclusion that *all such existences must have originated in the design of an all-wise Creator*. It may, however, remain a question whether the varieties of the human race have not each of them sprung from as many separate parent stocks, just as we may conclude that the varieties of the several species of animals must have descended from parents of their own kinds ; for no one affects to say that the greyhound, the pointer, the tarrier, &c. could have descended from any single pair of the canine species. Those, however, who conceive that Moses strictly described the origin of all the varieties of men, in his history of Adam and Eve, have been sustained in that opinion by able philosophical reasoners, who assign to local circumstances the peculiarities of each race.

One circumstance relative to the co-mixture of the human family, whether we ascend into past times, or look forward into future ages, merits notice. This idea was first developed in "the Morning's Walk from London to Kew," and arose during the author's contemplations in the church-yard at Mortlake, in Surrey. "We truly," says he, "are all but of one family as well as one nature. We burst as germs into organization ; we swell by a common progress into maturity, and we suffer in the grave a common fate."

"I reflected," says the author, "that, as it is now more than four hundred years since this burying ground became the depository of the dead, some of its earliest occupants may, without an hyperbole, have been ancestors of the whole contemporary English nation. If we suppose that a man was buried in this church-yard 420 years ago, who left six children, each of whom had three

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\* And the Lord set a mark upon Cain, lest any finding him, should kill him. And Cain went out from the presence of the Lord, and dwelt in the land of Nod on the east of Eden ; and Cain knew his wife, and she conceived, and bare Enoch ; and he builded a city, and called it after the name of his son.



children, who again had, on an average, the same number in every generation of thirty years; then, in 420 years, or fourteen generations, his descendants would be multiplied as under:

1st generation . . . . .	6
2d . . . . .	18
3rd . . . . .	54
4th . . . . .	162
5th . . . . .	486
6th . . . . .	1458
7th . . . . .	4374
8th . . . . .	13122
9th . . . . .	39366
10th . . . . .	118098
11th . . . . .	354274
12th . . . . .	1062812
13th . . . . .	3188436
14th . . . . .	9565308

That is to say, NINE MILLIONS AND A HALF of persons; or, as nearly as possible, the exact population of South Britain, might at this day be descended in a direct line from any individual buried in this or any other church-yard in the year 1395, who left six children, each of whose descendants have had on the average three children! And, by the same law, every individual who in any age has six children, may, within 420 years, be the root of as many descendants, provided they increase on the low average of only three in every branch. His descendants would represent a triangle, of which he would constitute the superior angle.

“To place the same position in another point of view, calculated also that every individual now living must have had for his ancestor every parent in Britain living in the year 1125, the age of Henry the First, taking the population of that period at 8,000,000. Thus, as every individual must have had a father and a mother, or four progenitors, each generation would double its progenitors every thirty years. Every person living may, therefore, in another sense, be considered as the apex of a triangle, of which the base would represent the whole population of a remote age.

1815, Living individual . . . . .	1
1785, His father and mother . . . . .	2
1755, Their fathers and mothers . . . . .	4
1725, . . . ditto . . . . .	8
1695, . . . ditto . . . . .	16
1665, . . . ditto . . . . .	32
1635, . . . ditto . . . . .	64
1605, . . . ditto . . . . .	128
1575, . . . ditto . . . . .	256
1545, . . . ditto . . . . .	512
1515, . . . ditto . . . . .	1024

1485,	Their fathers and mothers	2048
1455,	ditto	4096
1425,	ditto	8192
1395,	ditto	16384
1365,	ditto	32768
1335,	ditto	65536
1305,	ditto	131072
1275,	ditto	262144
1245,	ditto	524288
1215,	ditto	1048576
1185,	ditto	2097152
1155,	ditto	4194304
1125,	ditto	8388608

That is to say, if there have been a regular co-mixture of marriages, every individual of the living race must of necessity be descended from parents who lived in Britain in 1125. Some districts or clans may require a longer period for the co-mixture, and different circumstances may cut off some families, and expand others; but, in general, the lines of families would cross each other, and become interwoven *like the lines of lattice-work*. A single intermixture, however remote, would unite all the subsequent branches in common ancestry, thus rendering the contemporaries of every nation members of one expanded family, after the lapse of a determinate number of generations!

“ My ideas may be better conceived, if any person draw two parallel lines to represent the respective contemporary populations of two distinct epochs; and then set up on the lower line an indefinite number of triangles. In this scheme we shall have a just picture of the progressive generations of every nation, and we may observe how necessarily, in spite of artifice and pride, they must, by intermarriages, be blended as one family and one flesh, owing to the individuals of each pair springing from a different apex, and to every side being necessarily crossed by the sides of other triangles. By a converse reasoning, or by tracing the lines from the apex to the base, we may trace the descent as well as the ascent; and, by a glance of the eye, ascertain not only that every individual of a living generation must be descended from the whole of the parents of some generation sufficiently remote, but that every parent in such remote generation must necessarily have been the ancestor of every individual of a contemporary generation.

“ If, during the Crusades, any of the English intermarried with Greeks, or Syrians, or Italians, all of whom must, by intermingling, have been descendants of the great men of antiquity, so all the English of this age must be connected in blood with those intermarriages, and be descended from the heroes of the classic ages. But let not pride triumph in this consideration; for every male-



*factor* in every age, who left children, was equally an ancestor of the living race ! The ancient union of France and England, and of Belgium and Germany with England, must have rendered those people near of kin ; while each adjoining nation, mixing with its neighbours, must have blended the whole human race in one great family of remote common origin. This reasoning explains the cause of national physiognomy and character, the co-mixture of foreign nations being inconsiderable, and not sufficient to effect general characteristic changes ; while each nation becomes, in the course of ages, one common and blended family, in physiognomy, character, and genius. May so plain a demonstration of this great truth be the means of promoting their concord, their love, the interchange of mutual good offices, and their common happiness !”

Hence it appears that the circumstances of climate, habits, and food, may concur with intermarriages to produce a striking uniformity in all the individuals of a long established people, which may diffuse itself among the neighbouring nations, and if we suppose local circumstances to continue to operate through the succession of generations, the ultimate appearance of such stock would present characters extremely different from other stocks continued under other local circumstances, though the several stocks may have originated in one family.

Time, religion, and an endless combination of circumstances, have created among beings who have the liberty to abuse their reason, the most extraordinary habits and propensities. Thus some races eat without compunction, their enemies taken in battle : others devour animals and reptiles of all kinds with a greedy appetite : others make selections and devour only particular animals ; some eat their prey raw, and many disguise it by cookery ; while several nations live entirely on fruits and vegetables.

Some nations go entirely naked, without any sense of indelicacy. Others cover themselves with skins of animals ; while others clothe themselves in garments of various materials and colours, and indulge a vain pride in the gaudiness which they derive from the remains of animals and vegetables. But the most extraordinary mode of decorating the person, is the practice of tattooing, used by the South Sea Islanders, and many natives of America.

Among all the nations of the earth, says a recent voyager, none have carried the art of tattooing to so high a degree of perfection as the inhabitants of Washington’s

Islands. The regular designs with which the bodies of the men of Nukahiwa are punctured from head to foot, supplies in some sort the absence of clothing; for, under so warm a heaven, clothing would be insupportable to them. Many people here seek as much to obtain distinction by the symmetry and regularity with which they are tattooed, as among us by the elegant manner in which they are dressed; and although no real elevation of rank is designated by the greater superiority of these decorations, yet as only persons of rank can afford to be at the expence attendant upon any refinement in the ornaments, it does become in fact a badge of distinction. The operation of tattooing is performed by certain persons, who gain their livelihood by it entirely, and those who perform it with the greatest dexterity, and evince the greatest degree of taste in the disposition of the ornaments, are as much sought after as among us a particularly good tailor. Thus much, however, must be said, that the choice made is not a matter of equal indifference with them as with us; for if the punctured garment be spoiled in the making, the mischief is irreparable, it must be worn with all its faults the whole life through.

“ In performing the operation, the artist uses the wing bone of a tropic bird, *phaeton æthereus*, which is jagged and pointed at the end after the manner of a comb, sometimes in the form of a crescent, sometimes in a straight line, and larger or smaller, according to the figures which the artist intends to make. This instrument is fixed into a bamboo handle about as thick as the finger, with which the puncturer, by means of another cane, strikes so gently and so dexterously, that it scarcely pierces through the skin. The principal strokes of the figures to be tattooed are first sketched upon the body with the same dye that is afterwards rubbed into the punctures, to serve as guides in the use of the instrument. The punctures being made so, that the blood and lymph ooze through the orifice, a thick dye, composed of ashes from the kernel of the burning-nut, *aleurites triloba*, mixed with water, is rubbed in. This occasions at first a slight degree of smarting and inflammation; it then heals, and when the crust comes off, after some days the blueish or blackish-blue figure appears.



The tattooing of persons in a middling station is performed in houses erected for the purpose by the tattooers, and *tabooed* by authority. A tattooer, who visited us several times on board the ship, had three of these houses, which could each receive eight or ten persons at a time: they paid for their decorations according to the greater or less quantity of them, and to the trouble the figures required. The poor islanders, who have not a superabundance of hogs to dispose of in luxuries, but live chiefly themselves upon bread-fruit, are operated upon by novices in the art, who take them at a very low price as subjects for practice; but their works are easily distinguishable, even by a stranger, from those of an experienced artist. The lowest class of all, the fishermen principally, but few of whom we saw, are often not able to afford even the pay required by a novice, and are therefore not tattooed at all. *In illustration of this practice we have annexed an Engraving of a Tattooed Chief of Washington's Island.*

Man may also be considered as he exists in the *savage*, the *barbarous*, the *half-civilised*, and the *civilised* state.

The *savage* state is distinguished by the extreme imperfection of all those arts by which man provides for his own subsistence; by roving, irregular, and untamed habits of life, and by the absence of all regular forms of political union. In this state he has not yet learned to tame the lower animals, and render them subservient to his wants; he subsists almost entirely by hunting, fishing, and the spontaneous productions of the earth. Notwithstanding the progress made by the human race, this class of nations are still numerous, or at least occupy a wide extent of the earth's surface. The great continent of New Holland, with its neighbouring isles of Papua and Van Diemen, present man in his lowest state, imperfectly raised above the brute creation. The whole both of North and of South America, unless where occupied by Europeans, is held by tribes, ranking somewhat higher indeed, yet still savage. Even after the vast encroachments made upon their domain, it still extends perhaps over more than half of the New World. The maritime country, indeed, unless in the farthest extremity of the





Necker's Strand

TATOOED SOUTH SEA ISLANDER.





north and south, is filled to a considerable depth with colonies from Europe ; but the vast and beautiful plains of the interior remain in the almost undisputed possession of the savage natives. The isles of the South Sea display throughout all their population the same general character, though usually under a milder form, and approaching, in many instances, to the more improved forms of society.

A careful survey of man, as he actually exists, throughout all these extensive regions, will soon dispel the illusion by which the savage state has been represented as the abode of innocence, virtue, and purity ; and society as more and more corrupted in proportion to its departure from that state. In some small and poor communities, indeed, where no scope is afforded to human passions, a certain negative exemption from crime may be observed. But, in general, men in this state of society are formed into a number of small communities, of which the members are firmly attached to each other, but inflamed against all the neighbouring tribes, with the most unrelenting hostility. In warfare with them, they not only lose sight of every principle of humanity, but abandon themselves to the last excesses of savage fury. Although, too, their morals in some instances display a purity and severity which may be considered as exemplary, in others they are found abandoning themselves to irregular indulgences, with an entire disregard of moderation and decorum. It is remarkable too, although untamed freedom be generally characteristic of the savage state, that chiefs may be found who rule with a sway, and are regarded with an idolatrous veneration, scarcely known in the most absolute of the eastern despotisms. Notwithstanding all these irregularities, however, man displays qualities, even in this low estate, which make him appear great. Individuals, or at least small associations, having themselves only to trust to for defence, subsistence, and all the wants of life, acquire an invention and intelligence, as well as a sense of dignity, which are not observed among the lower ranks of civilised society.

The next stage of human society is that which may be called the *barbarous*. Here subsistence is derived chiefly



from pasturage, intermixed with some rude agriculture. The spirit is still warlike, though the laws of war are not altogether so ferocious as among savage tribes. The political constitution inclines to aristocracy, and the mass of the people are usually in a state of servitude. The aspect, both internal and external, of these states is rough and turbulent; robbery and piracy usually prevail to a great extent, and are reduced to a regular system. These nations, however, appear in some respects in a favourable light: energy of character, honourable principle, and warm domestic and social affections, may be considered as characteristic of them. This state was that of all Europe, during the long series of the middle ages. It is at present the general state of Africa; for though the northern coast of that continent once ranked higher, it seems to have entirely relapsed into barbarism. Under the same head we may place Arabia, and the whole of the great central *plateau* of Asia. The Malay inhabitants of the Indian archipelago may also be included; though the tribes occupying the mountains in the interior can scarcely be ranked above savages.

The next degree in the scale is that which may be called the *half-civilised* state. Under this title we would include the great empires which occupy the extensive and fruitful plains of Southern Asia, China, Indostan, Persia, and in part Turkey, though this last retains many traces of barbarism. In these states, agriculture and some of the finer manufactures are cultivated with great assiduity, and carried to a very high degree of perfection, but foreign commerce exists only in a very limited degree. The government of these states has for many ages been altogether despotic; and every species of aristocracy, except that of the priesthood, is crushed beneath the weight of the sovereign power. The people are orderly and industrious, but tame, quiet, and feeble; all tendency to innovation is checked, and the whole fabric of society has, almost from time immemorial, remained in a stationary state.

Wherever the barbarous and half civilised nations come into contact, the former, by their more energetic and warlike character, uniformly gain the ascendancy, and

become conquerors. This proximity exists along the whole line of Asia ; the southern empires of which have, accordingly, from the earliest ages, been subject to Tartar sovereigns. In consequence, however, of the attractions of art and luxury, the victors have always more or less yielded to the vanquished, and have even studied to leave the general frame of society and industry untouched. The consequence has been an interchange, in some degree, of character between the conqueror and the conquered. Among the latter the people are more civilised than the sovereign and men in power ; among the former the case is reversed. Hence India and China display an infusion of Tartar barbarism ; Tartary imbibes a mixture of Indian and Chinese civilisation.

The last state of society is that which, compared with all others, seems well entitled to the name of *civilised*. This may be justly claimed by the nations of Europe, particularly by its middle states of Britain, France, and Germany. It is here that all the branches of national industry have been carried to a perfection before unexampled. Agriculture is conducted in a manner, if not more industrious and persevering, at least more skilful and scientific. The manufactures are not quite of so fine a texture as a few of those carried on in Indostan ; but they surpass all others in productiveness, and in the vast scale of the machinery employed. Commerce is extended to every quarter of the globe. Political institutions have been formed, by which public liberty is preserved without that turbulence and disorder with which in barbarous nations its enjoyment is attended. All the sciences, and all the arts, both useful and elegant, are carried to a perfection which eclipses whatever any former age, or any other part of the globe can boast of. Civilisation has now struck so deep, as to render nugatory every apprehension of its taking a retrograde course, or even ceasing to become progressive. The civilised nations of Europe are in no danger, like those of Asia, of being crushed or oppressed by barbarous tribes. On the contrary, the military art having been improved among them, in full proportion to every other, has given them a decided and complete superiority over all the nations less advanced in



civilisation. This superiority, combined with the vast extent of maritime enterprise, has distinguished modern times by an entirely new feature—the dominion of Europe over every other quarter of the globe, and the establishment of the colonial system on a scale before unexampled.

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The existence of the human species upon the earth is incomprehensible without the study of Natural History. This delightful knowledge contributes to all the pleasures which embellish our course. In the first ages of the world Man, formed naked, and almost as if escaped from shipwreck, in springing forth from his maternal cradle, re-claimed from all parts the assistance of Nature. He had no innate instinct to direct his movements and guard his existence. His infancy was extended and sorrowful; and the necessities of life forced the business of his existence.

This ancient time is represented under the name of the Golden Age by the poets; during which man lived in a state of pure nature. One eternal spring, and tides of zephyrs blown constantly from the flowers over all the ground, extended of immense carpet of verdure in the country; there the tiger and the wolf grazed the tender herb close by the lamb and the gazelle; the eagle and the vulture with the innocent dove chaunting their loves under the shades of the groves. Man, placed in this happy Eden, with his lovely companion, found, under the shade trees of delicious fruits, repose and happiness. Every morning rising full of health, youthfulness, and vigour, with the sun, he thanked the God of Nature for the benefits enjoyed; and thus passed away in joy and contentment the days serene and pure as his love.

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